DOCUMENT RESUME

ED 406 182 SE 059 854

AUTHOR Smith-Sebasto, Nicholas J., Ed.
TITLE Recent Graduate Works and Graduate Programs in Environmental Communication and Environmental Education. Volume XIV.
INSTITUTION North American Association for Environmental Education, Troy, OH.
REPORT NO ISBN-1-884008-27-5
PUB DATE Jan 96
NOTE 118p.
AVAILABLE FROM North American Association for Environmental Education, P.O. Box 400, Troy, OH 45373 ($8 members; $10, non-members).
PUB TYPE Dissertations/Theses - Undetermined (040) -- Reports - Research/Technical (143)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Educational Research; Educational Resources; Elementary Secondary Education; *Environmental Education; Higher Education; Nonformal Education; *Program Development; Teacher Education

ABSTRACT

This document is the 14th volume in a series that continues to attract and publish doctoral dissertations, masters theses, and project abstracts. It reflects an active desire to stimulate interest in nontraditional environmental education research that has escaped the attention that such a growing body of works deserves. The abstracts in this volume are organized into eight categories: (1) Citizen-Action Studies; (2) Communication Studies; (3) Educator-Centered Studies; (4) Facilities/Location Analysis Studies; (5) Formal Programming Studies; (6) Learner-Centered Studies; (7) Non-Formal Programming Studies; and (8) Others, which includes studies dealing with environmental education philosophy and educational administration as well as those that do not fit into any of the categories above. Also included is an Index to past Volumes. (JRH)

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ED 406 182

RECENT GRADUATE WORKS AND GRADUATE PROGRAMS IN ENVIRONMENTAL COMMUNICATION AND ENVIRONMENTAL EDUCATION

January 1996

Volume XIV

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NAAEE

NORTH AMERICAN ASSOCIATION FOR ENVIRONMENTAL EDUCATION

N.J. Smith-Sebasto, Editor

SE059654

Recent Graduate Works and Graduate Programs in Environmental Communication and Environmental Education

January 1996

Volume XIV

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University of Illinois at Urbana-Champaign
W-503 Turner Hall
Urbana, IL 61801

Copies of this volume, as well as the 1978 through 1993 editions, are available for $8.00 US for NAAEE members and $10.00 US for non-members from:

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Troy, OH 45373

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Recent Graduate Works and Graduate Programs in Environmental Communication and Environmental Education

ISBN 1-884008-27-5

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North American Association for Environmental Education

NAAEE is a network of professionals and students working in the field of environmental education throughout North America and in over 45 countries around the world. Since 1971, the Association has promoted environmental education and supported the work of environmental educators. There are many environmental interest groups and many organizations dedicated to improving education. NAAEE uniquely combines and integrates both of these perspectives, and takes a cooperative, nonconfrontational approach to promoting education about environmental issues.

The Association is made up of people who have thought seriously over lifetimes about how people become literate concerning environmental issues. NAAEE members believe education must go beyond consciousness-raising about these issues. It must prepare people to think together about the difficult decisions they have to make concerning environmental stewardship, and to work together to improve, and try to solve, environmental problems.

NAAEE recognizes the need for a coherent body of information about environmental issues. Its members also recognize that information and analysis are only part of an effective education program. To be truly effective, this body of knowledge must be integrated into all aspects of the curriculum and into all types of educating institutions for the widest array of audiences.

In order to translate theory into reality, and provide tangible support for environmental education and environmental educators, NAAEE engages in a variety of programs and activities. Some examples are the annual conference at varying North American sites, an extensive publications program, the Environmental Education Training Institute, the VINE (Volunteer-led Investigations of Neighborhood Ecology) Network, the Environmental Issues Forums (IF) program, the NAAEE Policy Institute, the Environmental Education Training Partnership (EETAP), the NAAEE Skills Bank, and NAAEE's Environmental Education Standards Project.

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INTRODUCTION

Recent Graduate Works and Graduate Programs in Environmental Communication and Environmental Education is Volume XIV in a series that continues to attract and publish doctoral dissertations and masters theses and project abstracts. This reference work is a cooperative effort of the North American Association for Environmental Education and the University of Illinois at Urbana-Champaign.

The publication's title reflects an active desire to stimulate interest in nontraditional environmental education research that has escaped the attention that such a growing body of works deserves. At the same time, the publishers remain committed to reproducing abstracts of doctoral dissertations and masters theses that also enrich the environmental education field.

Abstracts included in this volume are organized into eight (8) categories:

- **Citizen-centered Studies:** studies dealing with the involvement, or efforts to encourage involvement, of citizens in environmental problems, including personological characteristics related to involvement
- **Communication:** studies dealing with the analysis of various media efforts including examinations of the ability of various forms of media to produce changes in audiences
- **Educator-centered Studies:** studies dealing with the training and personological characteristics of teachers and interpreters
- **Facilities/Location Analysis:** studies dealing with descriptors and development plans for facilities and locations to be used for environmental education
- **Formal Programming:** studies dealing with the development and/or evaluation of curricula and/or instructional techniques for use in classrooms or other school settings as well as the impact of said curricula and/or instruction on learners, educators, or both
- **Learner-centered Studies:** studies dealing with the assessment of personological characteristics of students
- **Non-formal Programming:** studies dealing with the development or evaluation of programs used at camps, nature centers, parks, or other non-formal settings, including user personological characteristics and pedagogical and interpretive techniques
- **Others:** studies dealing with environmental education philosophy and educational administration, as well as those which do not fit into any of the categories above.

Recent Graduate Works is published biennially. The request for abstracts begins in the Spring of each year. Explanatory letters and printed abstracts forms are mailed to an ever-increasing list of graduate departments of environmental education, park administration, natural resource interpretation, environmental studies, communication, journalism, and other related areas. This broad coverage is designed to encourage responses from a range of programs which generate research related to environmental communication and environmental education.

Each volume of **Recent Graduate Works** also contains and Index to past Volumes. This feature allows readers to quickly survey published abstracts by year and subject category for items of potential

interest. The relevant abstracts may then be located and studied in the appropriate volumes. (Volume I was published in 1978) In addition, this publication offers an expanded directory of graduate programs in environmental communication and environmental education. It is hoped that these aids increase the value of **Recent Graduate Works** as a reference tool for educators, administrators, and students.

The lifeblood of these volumes is comprised of the institutions they feature and the readers who utilize them. At the best, the publication can operate on the leading edge of the environmental education field, documenting research trends and educational opportunities. The publishers wish to thank the contributors to this volume. They and others are encouraged to provide abstracts, program information, and suggestions so that future volumes will reflect continued improvement of the quality and usefulness of the series.

Nicholas J. Smith-Sebasto
Project Director and Editor

Abstracts

Citizen Action Studies

Title: Reducing household greenhouse gases: an environmental education project

Author: Theo de Boer

Date of Completion: 1992

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (non-thesis)

Advisor: John Fien

Abstract

This project addressed the urgent need to reduce greenhouse gas emissions and attempted to tap the huge potential for energy savings through conservation in the home and in passenger cars. The project involved the research, production, and field testing of an education booklet entitled *What's Your G.Q.?* aimed at Queensland (Australia) households. The centerpiece of the project is a family greenhouse gas audit through which a household may arrive at its 'greenhouse quotient' (G.Q.). The greenhouse quotient is a number on a scale inversely proportional to greenhouse gas emissions, with the Queensland family average pegged at 100. The audit is supplemented with explanatory notes and dozens of suggestions for improving the household score.

The project was based on the widest available research into the most effective strategies for energy conservation and greenhouse gas reductions. These strategies were drawn from psychological, educational, and economic research. The resulting booklet should find a ready acceptance into Queensland homes, either directly or through school classrooms. Although not designed as a school textbook, the booklet may form an important supplement to other educational resources on the topic of the greenhouse effect.

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Title: Beyond the Cartesian worldview: towards an environmental education for sustainable social action

Author: John Hillcoat **Date of Completion:** 1992

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

Critical community environmental educators stress the importance of educating people in skills and knowledge to undertake the social action necessary for meaningful social change which fundamentally alters the dominant social paradigm. Social change is a long-term process and consequently social activism needs to be sustainable. However, this is not the case, as people undertaking social action often burn out. This thesis argues that community environmental educators neglect the importance of educating for sustainable social action for the 'long haul'.

One of the major causes of burnout is a lack of social support. The use of support groups to help activists sustain social action is explored in this study. A support group consisting of activists and intending activists was formed. An action research study was undertaken with this group to monitor the professional development of the researcher, to identify the important issues concerning groups for community environmental educators, and to assess the validity of action research in the support group context.

The role of systematic written critical reflection was vital for the researcher to be able to deal effectively with issues concerning the control of the research. This reflection process also gave rise to the major issue which emerged in this study: the influence of Cartesian dualism in undermining the efforts of community environmental educators in educating for meaningful social change. While community environmental educators continue to emphasize the cognitive/rational aspects of humans at the expense of the emotional/spiritual aspects they will merely be reinforcing this dualism. finally, the study indicated that the action research process can be a valuable aspect of a support group as it can bridge the intellectual/rational versus emotional. spiritual dualism. This is particularly important because the experiencing of emotions and spirituality only becomes emancipatory when understood in the overall societal context.

Title: The role of community involvement in environmental education

Author: Anja Kramer **Date of Completion:** 1993

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

The objectives of this investigation were to evaluate the current state and future possibilities of community involvement in EE. For this purpose, the EE centers of the broader Brisbane region were chosen to be studied. The research question which defined this study was 'what is the role of community involvement in the work of environmental education centers?'

Issues of interest relevant to this question included an investigation of the current situation as well as planned future developments. Advantages and disadvantages of community involvement in the centers have been evaluated. The research identifies starting points and already existing strategies. The findings can form the basis for a further development of community EE.

The literature review explains different concepts of community involvement and analyzes key issues in the relationship between EE and community involvement, concluding with a possible framework for non-formal community EE by using existing examples. The research analyzes starting points of community EE, potentials and limits of community involvement in the work of centers, and factors that influence community participation. Recommendations are made based on these findings.

Title: Empowering the school community for change: an evaluation of participation in the Ashgrove Healthy School Environment Project

Author: Julie Davis **Date of Completion:** 1994

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

The purpose of this study was to evaluate aspects of participation in a participatory action research project: the Ashgrove Healthy School Environment Project. The evaluation sought to uncover the reasons that prompted participation, to identify structural barriers to initial involvement, and to uncover participants' perceptions of the process, including barriers and opportunities. It also sought to record evidence of any shift in decision-making and to draw implications about the findings that could assist the project, the school, other schools, and the wider community.

The evaluation involved focus group discussions and interviews with participants actively involved in the school project. It also included some examination of school documents and newsletters and has also drawn on the reflections of this 'insider' researcher, based on 2 years of involvement in facilitating the project.

As a result of this evaluation, a number of implications for the continuing project and for the school emerge. These relate specifically to the coordination of the Healthy Schools project and the development of the healthy Schools process, including innovative curricula, into the mainstream components of the school organization. The findings also suggest that negativism and resistance to change can be overcome if open communication, sharing of perceptions, and commitment to democratic decision-making practices are embodied in the project and guide its development.

The findings also have implications beyond the immediate environment of this particular school. They demonstrate that, in spite of the barriers, participatory action research is a successful process to guide change. the findings also demonstrate that the Healthy Schools process can be successfully initiated and implemented by people at the margins of decision-making. A project such as this may, in fact, provide an impetus to much more extensive community development activities well beyond a narrower school-based focus.

Title: An assessment of environmental knowledge and attitudes held by community leaders in the Hualien area of Taiwan

Author: Shih-Jang Hsu **Date of Completion:** 1994

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Robert E. Roth

Abstract

This study assessed environmental knowledge and attitudes held by community leaders in the Hualien area of Taiwan. A 55-item instrument was administered by mail to 250 randomly selected community leaders with a 70.4% response rate. Significant differences in knowledge scores by age, educational level, income level, and ethnicity and in attitude scores by age, educational level, occupation, and ethnicity were found. The findings of a stepwise multiple regression indicated educational level is the best predictor of environmental knowledge and attitudes. The overall level of environmental knowledge was determined to be moderately high and the attitudes appeared to be positive.

Title: Programming priorities for adult environmental education: a model needs assessment

Author: Christina Marie Turner-Milenovic **Date of Completion:** 1994

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Robert E. Roth

Abstract

The principle purpose of this study was to create a model needs assessment to provide adult educators, specifically The Ohio State University Extension in Highland County, with a means of obtaining a community's input as to what to include in program planning for adult environmental education. The citizens' interests in an attitudes toward the environment were also measured. A systematic random sample was drawn from the registered voters of Highland County and questionnaires were mailed to the sample. Through analysis of the data, the top environmental issues of concern were identified as solid waste, water pollution, and agricultural practices.

Communication Studies

Title: Textbooks, schools, and society: an analysis of discourse in science textbooks

Author: Lesley Anne Johnston **Date of Completion:** 1992

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

An existing method of analysis of sentence structure was modified and applied to two science textbooks used in Queensland schools. The discourse in the textbooks was analyzed and discussed in terms of transformations and negative incorporation; classification and control; reality, with particular reference to metaphor, time and power relationships, and negation. The relationships between science, technology, society, and the environment as presented in the textbooks were analyzed.

Literature reviews were conducted on previous research on textbooks, discourse analysis, and science, technology, and society education.

Passive transformations were found to be used frequently in the textbooks. They excluded direct reference to agents of action, particularly human agents. Responsibility for actions was distanced or obscured through the use of passive transformations. Metaphors, used to support explanations, were found to represent the relationship between society and the environment as one of management for economic advantage.

Title: Analysis of environmentalism in the print media

Author: Gillian Kidman **Date of Completion:** 1992

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (non-thesis) **Advisor:** John Fien

Abstract

Has the increase in awareness of the environment been reflected by an increase in the coverage of environmental issues in the mass media? Partial answers to this question are based on a study of a major city broadsheet newspaper, *The Courier-Mail*. The study consisted of a content analysis of news items published in June at 5-year intervals between 1967 and 1992.

Environmental-theme articles were coded into 10 categories: energy, food production, global warming (ozone depletion), land degradation, oceans, plants and animals, radioactive poisoning, toxic chemicals, and water. Articles were then measured in terms of column length and width from which the article area was calculated. These areas were totaled for each category and converted to a percentage

of total news published. An 'attention score' based upon page number, location on page, size of article, and size of heading was calculated for each article and recorded.

Findings indicate that there has been an increase in the amount and variety of environmental news in the mass media over the past 25 years. The prominence of these environmental news items has also increased, based upon the results of the 'attention score'. It was also found that the 'attention score' could be used in conjunction with the more traditional methods of content analysis.

Title: Language and nature: a consideration of words and worlds

Author: Mark S. Meisner **Date of Completion:** 1992

Institution: York University

Department or Program: Faculty of Environmental Studies

Degree: MES (thesis) **Advisor:** David V.J. Bell

Abstract

The language of environmental discourse--words and phrases used in discussing "environmental" issues and problems--plays an important role in the construction of ideas of nature and in mediating human relationships with nonhuman nature. The relationship between language and nature is considered using a theoretical synthesis and a case study. The synthesis draws on material form environmental thought--particularly deep ecology--and various forms of applied linguistic theory and metaphor theory. Aimed at finding how lexical choices contribute to the construction of ideas of nature, the case study is a qualitative lexical analysis of the language of 3 Canadian environmental opinion leaders of varying ideologies. The findings of the study are that: 1. each person used a range of problematic language; 2. The differences between them were not significant; 3. Each used language that implicitly contradicted their views; and 4. This raises questions about the adequacy of the available language for expressing concern for nature. The thesis then concludes with a proposed taxonomy of language-related issues for environmental thought, a discussion of the implications of some of the key image schemas, metaphors, and keywords in the discourse, and some thoughts on the potential for more positive language. The following conclusions are drawn: 1. that there are diverse ways in which language constructs an anthropocentric-resourcist view of nature; 2. that there is evidence to suggest that some who argue for a more ecocentric--nature centered--approach are using such implicitly contradictory language; 3. that there is room for environmental thought guided language reform in many of the areas, although questions of adequacy remain; and 4. that the process of language reform must be accompanied by philosophical, ideological, lifestyle, and social-structural changes.

Title: The role of geography textbooks in education *for* the environment: a discourse analysis of Geography 16-19 Project texts

Author: Sharon Maree Flavell Bennett **Date of Completion:** 1993

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

The principles of education *for* the environment have received widespread acceptance amongst environmental educators as a means of conveying a philosophy which promotes positive change for society and ecologically sustainable practices. Geography is potentially the existing school subject best able to act as a vehicle of such education. The Geography 16-19 Project, a British curriculum project, adopted a people-environment approach and enquiry-based learning strategies to assist in the facilitation of EE. The textbooks produced by the Project team are exemplar resources for the Project's philosophies and strategies.

Literature reviews were conducted on geography as a school subject, EE, the Geography 16-19 Project, and the notion of discourse. A method of discourse analysis was then applied to a selection of the Project texts. The analysis focused on the effects of choice of content, approaches to environmental issues, the use of passive agency and metaphor in texts' messages about environmental issues, and positive behaviors *for* the environment. The analysis revealed the limits to which the texts, as a collection, might potentially educate students *for* the environment through geography. Examples of those sections of the texts which displayed possibilities for effective education *for* the environment are highlighted, and suggestions are made as to ways in which the texts might be improved to strengthen their links with EE.

Title: NAPAP's blindspot: the role of communication at the intersection of science and public policy

Author: Katherine A. McComas **Date of Completion:** 1994

Institution: Boston University

Department or Program: Department of International Relations

Degree: M.A. (non-thesis) **Advisor:** James Shanahan

Abstract

Much has appeared in the U.S. media about acid rain and its effects on the environment since acid rain first became an international issue in the 1970s. In the United States, increasing acidity in rain measured in the Northeast has caused widespread concern over the possible damage to aquatic and terrestrial ecosystems. Canada has also voiced concern over presumed damage to its forests and lakes due to sulfur and nitrogen emissions from U.S. factories in the Midwest. Having domestic and international implications, acid rain has become a rallying cry for action for environmentalists, sportspersons, and politicians alike.

Lack of scientific certainty, however, has delayed legislative response. In 1980, Congress passed the Acid Precipitation Act (APA), which formally acknowledged a need for further research. In this manner, the APA mandated a 10-year program, the National Acid Precipitation Assessment Program

(NAPAP), to conduct scientific research on acid rain and assess its impacts on the environment. In 1991, NAPAP presented its conclusions—too late, critics argue, to affect policy since the NAPAP final report came six months after Congress had passed the 1990 Clean Air Act Amendments. These chronological missteps may not have had such impact, though, had NAPAP not erred in another essential area: communication. According to NAPAP's Oversight Review Board, the program compromised its impact by failing to communicate effectively with the public.

A survey of three national newspapers, the New York Times, the Washington Post and the Christian Science Monitor, confirmed that NAPAP did not receive much coverage in relation to total media coverage of acid rain. Additional qualitative research demonstrated this absence is only partly because of its neglect of communication. Political, scientific and journalistic factors also contributed to NAPAP's absence from the public and political forum.

Title: A case study of the relationship of magazine type and writer style to categories of "comprehensiveness" of tropical deforestation coverage

Author: Amy M. Sell **Date of Completion:** 1994

Institution: University of Wisconsin – Madison

Department or Program: Journalism and Mass Communication

Degree: M.A. (thesis) **Advisor:** Sharon Dunwoody

Abstract

The purpose of this study was to determine if differences exist in the coverage of an environmental topic, tropical deforestation, due to magazine type or writer style. Using a sample of articles from environmental, science, and general-interest magazines, a variety of variables including writer type were examined. Special interest was paid to identifying differences in coverage of Lundburg's 5 categories of comprehensiveness: background information, causes, effects, solutions, and documentation.

Forty-three articles were examined for the presence or absence of 50 variables, representative of the 5 category headings. The patterns of appearance of these variables were studied in reference to magazine type and writer type. Specifically, variations in the amount of coverage of each category were explored to see if magazine type and/or writer type had a significant influence.

The findings indicate that both magazine and writer type in this particular case study were related to the comprehensiveness of coverage of tropical deforestation. In all cases, comparing environmental, science, and general-interest magazine coverage, special-interest to general-interest magazine coverage, and coverage by science writers to coverage by environmental writers, differences in means of coverage were found. Most significantly, the environmental magazines studied were most comprehensive in the coverage of causes and solutions. The special-interest magazines were more comprehensive in the coverage of solutions than the general-interest magazines. The environmental writers were more comprehensive when covering causes than the science writers.

Although differences in the findings were identified, the most surprising outcome of this inquiry is the similarities between the magazine types in the coverage of tropical deforestation. None of the magazine types differed from another in the coverage of each category by more than two variables, a small difference when the amount of variables that could have differed is considered. Also, the coverage of Lundburg's (1984) categories is low by all the magazine types.

Title: Newspaper coverage of zebra mussels in North America: a case of "Afghanistanism"?

Author: Donald E. Roush, Jr. **Date of Completion:** 1995

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Rosanne W. Fortner

Abstract

A content analysis of 218 newspaper stories mentioning zebra mussels was conducted. All appeared between June 1, 1988 and May 31, 1993 in five newspapers: Cleveland *Plain Dealer* (N = 88), Columbus *Dispatch* (N = 72), Cincinnati *Enquirer* (N = 23), Louisville *Courier-Journal* (N = 21), and Memphis *Commercial- Appeal* (N = 14). The research questions were two: How much zebra mussel information has been disseminated through large, metropolitan newspapers? and Is Afghanistanism–a term for the portrayal of a newspaper's own metropolitan area's environmental issues as less severe or less negative that those occurring elsewhere–evidenced in the coverage of zebra mussels?

Findings show more extensive coverage near the site of worst infestation, as would be expected by news' geographic proximity property. However, there was more early coverage in Columbus and Louisville than in Cleveland. The percentage of stories stating urgency and mentioning adverse effects was found to decrease over time, with the greatest change in those papers granting the problem the most coverage. The most pervasive use of urgent words was found in Columbus, Cincinnati, and Louisville. Overall, data provide patchy support on the question of Afghanistanism's occurrence. Integration of findings into a theory of distortion in environmental communications is suggested. Fertile areas of linkage may be found in risk perception, uses and gratifications, and stochasticity.

Educator-centered Studies

Title: The classroom practices, professional preparation, attitudes and concerns of state primary classroom teachers in Brisbane North Region, Queensland, regarding environmental education

Author: Helen Spork **Date of Completion:** 1990

Institution: Griffith University

Department or Program: Master of Environmental and Community Health

Degree: MEnvCH (thesis) **Advisor:** John Fien

Abstract

The purpose of this survey-based research study was to investigate the current nature of EE in Queensland primary schools and, in particular, the extent to which education *for* the environment is incorporated in classroom programs. The sample for this study included 300 state full-time primary classroom teachers in Brisbane North Education Region, Queensland. The research investigation involved surveying these teachers about

- their current practices in EE,
- their professional preparation to teach EE concepts,
- their attitudes towards EE,
- their concerns about implementing EE, and
- the factors influencing teachers' current practices in EE.

The research used for the study was a postal questionnaire.

Findings of this study indicate that classroom programs in primary schools in Brisbane North Region emphasize education *in* and *about* the environment and de-emphasize education *for* the environment. In relation to the professional preparation of the teachers in this study to teach EE concepts, the vast majority have had no training, have made minimal use of existing regional consultancy services, and have had limited exposure to the departmental policy document for EE. However, the vast majority of teachers in this study have indicated positive attitudes towards attending inservice teacher training in EE, particularly if offered during school time. The findings also illustrate that primary teachers in Brisbane North Region have very positive attitudes toward EE in general; that is, they regard it in all its forms (education *in, about,* and *for* the environment) as important to include in classroom programs.

The significance of this research study lies in its capacity to provide an information base for curriculum and professional development initiatives that might make a real contribution to the development of socially transformative EE in Queensland schools.

Title: Education *for* the environment: a critical ethnography

Author: John Francis Fien **Date of Completion:** 1992

Institution: University of Queensland

Department or Program: Department of Education

Degree: Ph.D. **Advisor:** G.B. Cox

Abstract

This dissertation was centered upon a critical ethnography portrayal of the pedagogical reasoning and actions of Steven, an Australian teacher, as he planned and taught an education *for* the environment program based upon the *People and the Environment* semester unit of the Year 11-12 geography syllabus in Queensland.

Literature on EE, critical curriculum theorizing, and social action theory are integrated in Chapter 2 in order to develop a critical curriculum theory for EE which contains within it a language of possibility. This theory is described in this study as 'critical education *for* the environment'. Research on teachers' thinking is reviewed in Chapter 3. The 5 phases of the research design of the study are outlined in Chapter 4. The findings of the investigation into the macro-context of teaching EE concepts in Queensland are presented in Chapter 5.

The conclusions of a process of critical reflection and theorizing on the findings are presented in Chapter 7. As well as summarizing the study, this process considers the counter-hegemonic potential of a liberal education *for* the environment perspective. This provides the basis for an assessment of the relationship between the normative theory of critical EE and the conditions that may be necessary for the successful conduct of critical pedagogy in EE. Arguments for adopting a less restrictive concept of critical education *for* the environment than found in the EE literature are presented. These arguments are based upon a review of the potential benefits for students and society identified in Steven's approach to EE. The process of critical reflection in this last chapter is extended to the research design in order to provide an analysis of the value of critical ethnography in critical curriculum research.

Title: Environmental education: a component, or integral part, of preservice teacher education

Author: Jan Bindon **Date of Completion:** 1993

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

The education of teachers plays a very strategic role in ensuring an environmentally literate public enjoying sustainable lifestyles. There has been much support at international, national, and individual levels for EE to be an integral part of all education. However, despite these recommendations, EE is still limited in scope and depth and dominated by the natural sciences and geography. It is imperative that teacher education institutions integrate EE into their preservice programs. In this way, teachers may become environmentally literate and better able to help their students gain an awareness and understanding of the world they live in and of how their lifestyle choices will ultimately affect it.

This thesis examined the history, current status, and preferable future of EE in preservice teacher education programs through an exploration of available literature and a case study of a curriculum initiative at Griffith University to integrate an EE theme throughout its preservice teacher education program.

Title: A study to develop an environmental education inservice program for secondary teachers of the Madison Metropolitan School District

Author: Billie Huddleston **Date of Completion:** 1993

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources/WI Center for EE

Degree: M.S. (non-thesis) **Advisor:** Daniel J. Sivek

Abstract

This paper describes the development and implementation of an EE inservice which was held in January 1993 at Madison East High School, Madison, WI. Research from secondary sources, including the Madison Metropolitan School District EE Guide and teacher interviews, were used to determine the inservice goals and ultimately the program. The half-day inservice included 3 parts: 1) clarification of definition of EE and state/district requirements; 2) examples of how to do a case study; and 3) examples of environmental action and programs. As determined through evaluation and informal conversations, initial teacher reactions to the inservice were positive, but little long-term benefit seems to have been derived. Strengths of the inservice included initial motivation to attend which was provided by offering workshop choices and secondly, by including something unique to the program–a musician–teachers were further motivated during the session. The major recommendation for future workshops is to involve teachers more in each part: in initial planning stages, during the workshop by requiring more active participation, then, finally, by providing follow-up session at a later date in which they can be involved. Time limitations also seemed to be a major constraint with a full-day inservice being preferable

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Title: An assessment of Wisconsin teacher's perceived competencies in, attitudes toward, and amount of class time devoted to teaching about the environment

Author: Jennie Lane **Date of Completion:** 1993

Institution: University of Wisconsin – Stevens Point

Department or Program: Department of Natural Resources

Degree: M.S. (thesis) **Advisor:** Richard Wilke

Abstract

The purpose of this study was to assess Wisconsin teachers' perceived competencies in, attitudes toward, and class time devoted to teaching about the environment. To accomplish this assessment, a valid and reliable survey instrument was developed and mailed to randomly selected Wisconsin elementary and secondary education teachers.

The analysis strongly suggests that environmental education (EE) preparation is a major factor influencing teachers to include EE concepts into their classroom teaching. The findings imply that the lack of this training is a major reason why teachers do not infuse EE concepts into their curriculum.

The analysis showed that teachers perceived they were competent in addressing the learning outcomes of EE. The findings also identified certain variables that are characteristic of teachers who perceive themselves as competent in providing education about the environment. These variables include: preparation in EE during preservice training, participation in inservice EE training, possession of an EE curriculum plan by their school district, and frequency of reference to the plan. These findings are especially relevant as the analysis revealed that on average teachers report they spend less than 30 minutes per week per subject teaching about the environment. In spite of information gathered about amount of class time devoted to EE, it is important to note that this study concludes that teachers' attitudes toward EE are positive. They believe that the inclusion of EE concepts into their classroom teaching is important.

This study also served to provide pertinent information regarding the impacts of certain state EE mandates. These mandates relate to preservice teacher education in EE and school district implementation of a K-12 EE curriculum plan. Positive findings regarding the effect of these mandates were found, however, areas in which further attention is needed were also discovered.

Title: Developing and implementing an inservice training program in environmental education for teachers of Grade 1-2 in the Wausau School District

Author: Connie M. Marvel **Date of Completion:** 1993

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources/WI Center for Environmental Ed.

Degree: M.S. (non-thesis) **Advisor:** Randall Champeau

Abstract

Environmental Education (EE) in Wisconsin is a subject that is mandated to be infused into existing curricular areas in a school district's elementary education program. The Wausau School District (WSD) provides EE resources and a resource guide for its schools; however, teachers did not receive adequate inservice training in the use of these resources when they were introduced in Fall 1991. This research project was designed to help teachers more effectively use available EE resources.

A needs assessment survey was completed by WSD K-5 teachers in February 1993, to provide guidelines in developing the inservice. An inservice was then provided for teachers of grades 1-2 on April 22, 1993 at the Wausau School Forest. The inservice consisted of an overview of EE goals and objectives, a review of the resource materials, and participation in activities selected from each resource.

Teachers completed an inservice evaluation immediately following the inservice, and again one month later. Evaluation results indicated that the teachers valued participation in the inservice activities, and were able to make better use of resource materials in their classrooms following the inservice. Results were used to develop recommendations for succeeding EE inservicing of teachers of K, 3, 4, and 5 grade levels.

Title: The development of a model program to train high school environmental education counselors to increase the frequency and degree of implementation of the environmental education curriculum in the Tri-County Area School District

Author: Larry J. Manci **Date of Completion:** 1994

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources/WI Center for EE

Degree: M.S. (non-thesis) **Advisor:** Daniel J. Sivek

Abstract

The purpose of this project was to determine what factors impede early childhood through grade 8 teachers in the Tri-County Area School District (TCASD) from infusing EE into their respective curricula, and to develop and implement an EE counselor program (EECP) at the elementary and middle school levels to assist teachers in overcoming the barriers to implementing the EE curriculum (EECU).

The findings of a pre- and post-assessment indicated that using trained high school juniors and seniors as cross-age teachers, or Environmental Education Counselors (EECs), to assist teachers in the implementation of the EECU is highly effective. The pre-assessment revealed that the most common barriers to implementing the EECU were lack of preparation and class time, and a perceived lack of knowledge to teach about the environment. The post-assessment indicated that teachers became more aware of the district's EECU, referred to it more frequently, used more community sites, and participated in more field trips to the school forest. District teachers also had the perception they were more actively involved in implementing the EECU, and most importantly, doubled the amount of time they spent teaching about the environment. A vast majority of respondents indicated that the EECP was very effective in assisting them in implementing the EECU.

Title: Environmental education in Illinois: a teacher survey

Author: Theresa Lynn Smith **Date of Completion:** 1994

Institution: University of Illinois at Urbana-Champaign

Department or Program: Department of Forestry

Degree: M.S. (thesis) **Advisor:** N.J. Smith-Sebasto

Abstract

A questionnaire developed by the Wisconsin Center for Environmental Education, modified to be Illinois specific, was sent to a computer-generated random sample of K-12 public school teachers taken from the 1992/93 Teacher Service File for the State of Illinois, which was provided by the Illinois State Board of Education.

The findings of the study indicate rather low levels of integration of EE concepts in Illinois public schools, especially as grade level increases. Ninety-two percent of the respondents had not received any preservice training in EE, and 81 percent had not received any in-service EE training. Levels of infusion of EE concepts in Illinois K-12 public schools are low. Respondents identified not enough resources or funding as the main reason for not infusing EE concepts into their teaching. In comparison with this, better access to resources was indicated most often as a situation that would influence teachers to infuse EE concepts into their teaching. Respondents' admittance of not having enough knowledge or

background to infuse EE concepts strongly supports their reported lack of preservice and/or in-service training in EE. Further support comes from the strong indication that more in-service training in EE would influence teachers to infuse EE concepts into their teaching.

The most commonly reported cognitive domain education methods included problem solving/critical thinking techniques, cooperative learning, observations, independent or group projects, community resource use, experiments, and outdoor teaching strategies, in that order. Sensory/awareness activities were indicated as the most frequently used affective education methods in the classrooms. Values clarification, action learning, moral development activities, behavior modification, values analysis, and inculcation, in that order, were also indicated. A majority of the respondents indicated involving their students in environmental action strategies in the classroom. Those who reported not using any of the given strategies felt that lack of time was an important reason for not using them.

The vast majority of teachers who responded to this questionnaire felt that their instruction did contribute to the environmental literacy of citizens.

Title: Teacher inservice/workshop reaching the student's affective domain in environmental education

Author: Robert J. Weitzel **Date of Completion:** 1994

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources/WI Center for EE

Degree: M.S. (non-thesis) **Advisor:** Daniel J. Sivek

Abstract

Increasingly, research in EE has shown that in order to guide a student toward more environmentally sound decision making, lessons should be designed to not only increase the student's "environmental knowledge," but also to instill in them the sense of delight and wonder of the natural environment. Student need to "feel" the reason for protecting the environment–not just know it. The inservice/workshop, which is the focus of this paper, was designed to introduce K-12 teachers in the Tomah, WI School District to the need for an affective teaching approach to environmental values education (EVE).

The inservice was held on 2 consecutive Tuesdays. Each session was 2 hours in duration. The first session focused on discussing the need for affective education and on various EVE teaching strategies. In the second session, affective/EVE resources were reviewed and participants developed an EVE lesson plan utilizing one of several of the value education strategies.

As a result of the inservice, 3 EVE lesson plans were generated. These lesson plans will become part of an interdisciplinary affective/EVE resource guide to be developed as the result of this and future inservices/workshops.

Title: Feminist environmental education: towards radical transformation of human-Earth relations

Author: Kristin A. DeBoer **Date of Completion:** 1995

Institution: Antioch New England Graduate School - Antioch University

Department or Program: Environmental Studies

Degree: M.S. (thesis) **Advisor:** Cindy Thomashow & Stephanie Kaza

Abstract

In this thesis I researched the issues, values, and concerns feminism brings to EE. The intersection of feminism and EE is rarely articulated in the literature of either movements. Therefore, through in-depth interviews, I asked 12 environmental educators to explain the impact of feminism on their philosophy of education, pedagogy, and application of education to society. This qualitative research revealed a distinct tone and purpose when EE is practiced with a feminist orientation. The discussion of the results is organized into 5 central themes. First, feminist theory can help students understand social and ecological systems by challenging dominant assumptions about human relations to nature, especially as they relate to gender issues and value dualisms. Second, these feminist environmental educators promote an interdisciplinary approach to education that is fundamentally based on establishing connections between diverse perspectives. Some of these educators also incorporate bodies of knowledge that are often suppressed by patriarchal education, including self knowledge, multicultural knowledge, and womens' knowledge. Third, in the problem solving dimension of EE, feminism highlights the for critical investigation of issues, dealing with power relations and encouraging respectful communication about controversial issues. Fourth, feminist environmental educators often infuse learning with a concern for ethics and values that are rooted in mutual and caring relationships with the Earth community. Last, most of these educators encourage holistic praxis among their students in which they balance reflection and action towards creating more ecological and humane communities. My research showed that feminism can be significant in EE because in informs a radical challenge to exploitative and oppressive ways of relating to the Earth and its people. Feminist environmental educators offer a hopeful, but rigorous, path of finding more life-affirming ways of living with Earth and each other.

Title: Attitude changes held by Ohio County extension agents due to participation in low-level radioactive waste inservice training

Author: Mark Carl Hauser **Date of Completion:** 1995

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Robert E. Roth

Abstract

Ohio County extension agents were introduced to the Low-Level Radioactive Waste statewide education program through inservice training. The purpose of this study was to explore and describe agents' attitudes toward the appropriateness of the program, their participation levels in the program, and Extension's mission. Telephone interviews of 100 agents selected through blocked random sampling were conducted. Attitudes concerning program utility and appropriateness as well as agent role and

participation correlated positively with inservice attendance. Agents with less than seven years experience held positive attitudes about the program. Agents not attending an inservice, yet responsible for program implementation held negative attitudes.

Title: An investigation of the determinants influencing teachers' recycling behavior: a study of Taiwan's Pingtung area

Author: Yun-Hsun Hsu **Date of Completion:** 1995

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Joseph E. Heimlich

Abstract

This study examined the degree to which elementary teachers in the Pingtung area of Taiwan are involved in recycling activities; 2) whether selected demographic characteristics have any influence on recycling behavior; 3) the degree to which elementary teachers possess environmental attitudes, environmental knowledge, intrinsic motivation, and extrinsic motivation; 4) whether demographic characteristics have any influence on environmental attitudes attitudes, environmental knowledge, intrinsic motivation, and extrinsic motivation; 5) whether there is any relationship among selected variables; 6) what factors would be predictors of recycling behavior; 7) perceptions regarding existing local and national problems, and major sources of environmental information as perceived by elementary teachers; 8) whether major sources of environmental information have any influence on environmental attitudes and environmental knowledge; and 9) what reasons deter elementary teachers' behavioral intentions in recycling participation.

Title: An investigation of the environmental literacy of teachers in south-central Ohio using the Wisconsin Environmental Literacy Survey, concept mapping and interviews

Author: David Earl Todt **Date of Completion:** 1995

Institution: The Ohio State University

Department or Program: Science Education

Degree: Ph.D. **Advisor:** Rosanne W. Fortner

Abstract

Environmental literacy is a concept that has been used a great deal in the past several years. Educators and politicians have called for the need of an environmentally literate citizenry. But what is environmental literacy? How do we achieve it in an individual, let alone an entire citizenry? Can we measure environmental literacy in a meaningful way? These questions and others formed the basis for this research. This research used both quantitative and qualitative techniques to explore individual construction of environmental knowledge, values, and behavior.

The level of environmental literacy was examined for teachers in an eight county region of southern Ohio. a random sample of fifty-four teachers were mailed the Wisconsin Environmental Literacy

Survey (forty-seven completed and returned it). Six teachers, three with high environmental literacy and three with lower environmental literacy were asked to participate in concept mapping, interviews and self-rating.

The Wisconsin Environmental Literacy Survey was found to be a good measure of the environmental literacy of a large group, but it failed to accurately measure the environmental literacy of some individuals. Alternative forms of assessment and gathering individual information about environmental literacy proved useful. In particular, interviews and concept mapping provided details about the cognitive construction of ecological principles and environmental literacy in individuals. Partial analysis of the concept maps was done using SemNet. These qualitative approaches generally agreed with the Survey, but of the six teachers involved in Phase II of the study, one was underrated and one was slightly overrated by using the Survey results alone. In addition, the qualitative approaches uncovered a major gap in the teachers' knowledge of ecological systems. The role and importance of energy in natural environments was missing from concept maps and interview responses. Another finding of the study was the importance of early childhood experiences in natural environments with adult role models.

Facilities/Location Analysis Studies

Title: Development of a prairie site on the Washington School playground for environmental education purposes

Author: Ellin A. Fisher **Date of Completion:** 1994

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources/WI Center for EE

Degree: M.S. (non-thesis) **Advisor:** Daniel J. Sivek

Abstract

EE in Wisconsin is mandated to be infused into the public schools' K-12 curriculum. Although Merrill Area Public Schools has an active school forest program involving EE, the site is heavily used by all the districts' schools, making frequent use for individual classes difficult. This project was designed to give the Washington School students immediate access to a hands-on environmental study site on the school grounds.

This project is an on-going, multi-phase process. The initial phase involved getting permission from the following: district administration, city oficials, and neighbors of the school. The next phase involved developing a site plan, creating, and implementing activities to involve staff and students, and organizing curriculum materials for the site.

The difficulties of the project included motivating staff to become involved, keeping the committee of task, and the short time-frame to complete all the steps in the project. The benefits were the excitement of the students, the successful completion of the site, and the positive community support.

Recommendations are to use more motivational techniques with the staff, allow ample time for project completion, and to provide numerous EE activities to encourage site use.

Title: Developing a prairie ecosystem to serve as a tool for environmental education infusion in the D.C. Everest School District

Author: David R. Miller **Date of Completion:** 1994

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources/WI Center for EE

Degree: M.S. (non-thesis) **Advisor:** Daniel J. Sivek

Abstract

Prairies, as rare and endangered ecosystems, continue to disappear due to increasing pressure to use land for development or agricultural purposes. In an attempt to help fulfill the 1990 state mandate for infusion of EE into the curricula and to stimulate this infusion into a variety of classes at D.C. Everest High School, a prairie ecosystem was established on the school property in the Spring of 1993.

In October 1993, interested faculty were inserviced on activities they could use with the prairie to infuse EE into their classes. To demonstrate the broad spectrum of possibilities, EE infusion activities were also discussed for use with a woodlot and pond also on the school property.

A follow-up survey and evaluation of all faculty conducted at the end of the 1993-94 school year showed that the prairie saw very limited use. The year end evaluation was preliminary in nature since the prairie was less than 1 year old at the time of the inservice, and many prairie forbs take 4 years to mature.

Surveyed faculty indicated there is a need for more time, inservicing, and activities to be able to properly infuse EE into their curriculum. Future inservices will be offered to provide the time and activities necessary for the teachers to efectively use a variety of outdoor teaching site near the school to infuse EE into their curricula.

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Title: A market analysis and visitor services plan for the Schmeeckle Reserve

Author: Deborah L. Yarmark **Date of Completion:** 1995

Institution: University of Wisconsin – Stevens Point

Department or Program: Environmental Education

Degree: M.S. (thesis) **Advisor:** Michael Gross

Abstract

The Schmeeckle Reserve is a 200-acre nature preserve located in central Wisconsin within the city limits of Stevens Point. It is associated with the University of Wisconsin – Stevens Point (UWSP). The role of the Reserve in providing recreation, environmental interpretation, and education opportunities is increasing. Recent developments have significantly increased the Reserve's ability to serve its visitors. A visitor service plan was desired to guide the development of the Reserve's facilities and services.

A market analysis was conducted of the Reserve and its associated facilities: visitor center, Wisconsin Conservation Hall of Fame, and 5 miles of nature trails from September 1993 to May 1994. Written questionnaires, personal interviews, and telephone interviews were used. A total of 8 different surveys with samples sizes ranging from 7 to 534 were conducted. Populations targeted for the analysis were UWSP students and faculty, Stevens Point residents, and out-of-town visitors staying at motels within walking distance of the Reserve. Surveys were conducted both on- and off-site.

Findings showed that for out-of-town visitors, UWSP students, and Stevens Point residents, the 3 most appealing opportunities offered at the Reserve are viewing nature-related exhibits, viewing wildlife, and using the trails to relax. Most out-of-town visitors had never been to the Reserve and were not aware that the Reserve existed, while 88% of the UWSP students and 52% of Stevens Point residents interviewed had visited the Reserve at least once in their life. Of Reserve trail users interviewed, only 12% were first-time users, of which 16% were out-of-town visitors. Fifty percent of Visitor Center guests were from out-of-town. Brochures drew more people to the Reserve's interpretive programs than any other form of advertising, and were the source listed most often by motel customers (38%) for information. Word-of-mouth was credited for brining more first-time guests to the Visitor Center than any other media.

Comments from UWSP faculty and student organizations showed appreciation for using the Reserve for classes and projects, but also concern about the need to manage the Reserve from an ecological perspective. Comments from trail users revealed an increasing conflict between pedestrians and bicyclers on the trails. Recommendations were made for limiting access to the Reserve's trails by bicyclers, while accommodating them by designing a bike trail primarily around the perimeter of the Reserve. Additional recommendations were made for visitor orientation, information services, administrative policies, visitor safety, outreach and advertising, and natural resource/ecological management.

Formal Programming Studies

Title: Critical reflection as a learning experience in mid-career professional development in environmental education

Author: Richard A. Rawlings **Date of Completion:** 1992

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

This case study documents the development of a course in critical reflection over a 1-year period. The course was presented in the second semester of 1992 and 1992. This study focused on the segment of the course that encouraged students to reflect critically upon their roles as environmental educators. The reflective segment of the subject included a series of 5 workshops and associated readings, a weekly professional journal, and a synthesizing essay. The course allows students to experience what it means to be critically reflective.

The study showed that courses such as this that challenge socially and culturally ingrained values, beliefs, and traditions have to be tackled with a great deal of care, patience, and sensitivity. Critical reflection encourages people to know things personally rather than just academically. This can be much more enlightening and empowering, but also requires much more honesty and a deeper sense of involvement. This requires both a new learning technique was well as new teaching strategies. New learning techniques such as autobiographical writing and journals, have been used.

The planning of the course not only has to take into account the very important content matter, but also the classroom scenario which must provide the safe, supportive, non-judgmental, non-competitive, democratic conditions that will encourage honest critical reflection. These include being aware of, for example, classroom seating, the lecturer-student relationship, tensions due to personal sharing, and the effects of assessment.

Title: Active environmental citizenship: an investigation of alternative teaching strategies

Author: Deborah Anne Heck **Date of Completion:** 1993

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

This report begins with an analysis of the ideological bases of EE and political education. It identifies 3 pedagogical approaches that claim to develop active environmental citizenship:

- socially critical action,
- liberal action, and
- socially critical case study

The literature review revealed that socially critical action is not a commonly used strategy within the formal education system, but that there is considerable debate between the proponents of socially critical case study and liberal action.

Critical ethnography was used to gather and critique data on the appropriateness and value of these strategies within the researcher's Year 12 geography class at Cleveland State High School. The first step in the critical ethnography was to analyze the macro- and micro-context of teaching geography in this school. This analysis revealed opportunities of each approach in the critical portrayals.

The critical portrayals revealed that both pedagogical approaches developed active environmental citizenship. The liberal action approach developed this to a greater extent than the socially critical case study approach. A second cycle of action research based on these findings involved plans for teaching that utilize both the socially critical case study and the liberal action strategies.

The report concludes with a series of critical reflections on the appropriateness of critical ethnography action research by a classroom teacher within the context of professional development, curriculum development, and EE research.

Title: Evaluation and change: a critical analysis of course evaluation in the higher education context

Author: Jennifer Ruth Awbery **Date of Completion:** 1994

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

Course evaluations are important in higher education, serving the 2 purposes of satisfying external accountability requirements and contribution to course improvement processes. The way in which evaluations are designed and conducted tends to reflect their orientation to 1 or both of these requirements. At the same time, evaluation models reflect different worldviews and underlying assumptions about the nature of social inquiry and knowledge and of decision-making in education. These are important considerations for a course such as the Master of Environmental Education at Griffith University, which promotes a critical and reflective orientation to education practice. Two cases of evaluation of this course, each based on a different methodology, were conducted and analyzed in this study. The research also compares and contrasts the 2 cases, particularly in relation to the philosophy of EE and to the way in which the evaluations are oriented towards accountability or course change.

Title: The effects of an extended case study on environmental behavior and associated variables in seventh and eighth grade students

Author: Gerald R. Culen **Date of Completion:** 1994

Institution: Southern Illinois University at Carbondale

Department or Program: Department of Curriculum and Instruction

Degree: Ph.D. **Advisor:** Harold R. Hungerford

Abstract

The purpose of this study was to assess the effects of an extended case study that focused on wetland issues with 7th and 8th grade students. The variables knowledge of ecological foundations, overt environmental behavior, and other precursor variables thought to be associated with behavior were examined. The extended case study is an instructional methodology that incorporates the issue investigation/evaluation and action training model. This methodology allows students to become involved in a teacher-directed investigation into an issue of local significance.

A modified pretest-posttest nonequivalent control group design was utilized with 15 intact classes from Illinois and Missouri. Six of these classes received 10-12 weeks of instruction in all four levels of the extended case study. These levels include awareness of wetland issues, investigation and evaluation of these issues, and citizenship action skills training. Four classes received 4-6 weeks of training in knowledge and awareness of issues only, and a third group of 5 classes served as a control, receiving 12 weeks of typical science instruction. Pretest data were collected on overt environmental behavior and knowledge of ecological foundations regarding wetlands. No significant preexisting differences were evident between the groups after examination of the pretest data. Posttest data were collected on the variables overt environmental behavior, knowledge of ecological foundations, individual locus of control of reinforcement, group locus of control of reinforcement, knowledge of citizenship action skills, and perceived skill in the use of citizenship action skills.

Analysis of covariance was used to compare the treatment groups and control groups means. Statistically significant differences were found with the variable overt environmental behavior. The 2 experimental treatments were found to be more effective that the control (E 1,12 = 15.34, p = .0001) and the full treatment was found to be more efective that the partial treatment (E 1,12 = 7.31, p = .0074) in increasing overt environmental behavior.

Title: Developing and implementing a comparative model of traditional and naturalized home landscaping techniques for students of Junior High age

Author: Michael J. DuMez **Date of Completion:** 1994

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources/WI Center for EE

Degree: M.S. (non-thesis) **Advisor:** Daniel J. Sivek

Abstract

The purpose of the project is to introduce junior high school students to the concept of stewardship as it applies to properties on which they live. During the project, students learned basic

environmental principles, developed decision-making skills in the application of these principles, and created a plan that applied these principles and decisions to their own home property. Student learning was assessed by the quality of the plan that they made, along with the rationale that went into its construction. Objective measures, such as worksheets and tests, were also used to determine the extent of their learning.

Although the project was originally designed for use in a junior high school, it began to take other directions. These included whole-school curriculum changes, community leadership experiences, and most significantly, the writing of a trail guide for a local nature center. The guide was used not only for the project, but also it became available within a county-wide area for other school districts, clubs, and general community use. The project and the guide have already proven to be significant beginnings in the promotion of the "natural areas" concept.

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Title: The development of an environmental education resource and activity guide for teachers of whole language in Grades K-3

Author: Lynn M. Hlinak **Date of Completion:** 1994

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources/WI Center for EE

Degree: M.S. (non-thesis) **Advisor:** Corky McReynolds

Abstract

"A Resource and Activity Guide for Teachers of Whole Language in Grades K-3" was developed to assist in promoting the infusion of EE into the existing language arts program at Keshena Primary School (KPS). Prior research revealed the importance of infusion for incorporating EE into other curricular areas. The utilization of environmental literature, activity guides, and thematic units helped provide the holistic instruction necessary for the successful infusion of EE.

A questionnaire administered to KPS staff in August 1993, assessed teacher knowledge and experience in EE instruction. Based on the responses to the questionnaire and consultations with grade-level representatives, 12 environmental themes were identified and developed into units consistent with the whole language philosophy. Literature lists of related trade books were generated for each theme. Following a February 1994, inservice, at which KPS staff were trained in the utilization of the Guide, a 3 1/2 month period was allocated for project implementation. A final questionnaire administered in June 1994, assessed the extent of Guide utilization and viability. Findings of the study indicated that the Guide was beneficial for the infusion of EE into the whole language classroom. Respondents also indicated a desire to continue utilizing the Guide in the coming school year.

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Title: The development and implementation of an environmental club at Wausau West High School to promote environmental literacy through a planned program of extracurricular activities

Author: Susan L. Helback **Date of Completion:** 1994

Institution: University of Wisconsin -- Stevens Point

Department or Program: College of Natural Resources/WI Center for EE

Degree: M.S. (non-thesis) **Advisor:** Daniel J. Sivek

Abstract

The purpose of this project was to develop and implement a student environmental club at Wausau West High School to promote environmental literacy through a planned program of extra-curricular activities. The Wisconsin Department of Public Instruction recommends that environmental ethics, citizen action skills, and citizen action experience be infused into the existing curricula at the secondary level; however, these three 3 levels of environmental literacy are not being attained.

Under the direction of the Environmental Steering Committee, an Environmental Needs Assessment Survey was administered by the club, which gave input into the environmental concerns of the school body. During the 1992-93 school year, the club sponsored a variety of activities based on the findings of the survey and the recommendations made by the advisory committee. The findings from the evaluation were inconclusive because of the low number of respondents.

Those who were involved with the club did acquire citizen action skills and experiences. Unfortunately, only a small number of students benefited due to time restrictions and lack of motivation. In the future, the author recommends that the club work in conjunction with administration and teachers to mandate student participation in EE projects for course requirements or as a general graduation requirement.

Title: Chesapeake Bay Integrated Curriculum and Student Service Project: evaluation of a pilot module

Author: Anita M. Kraemer **Date of Completion:** 1994

Institution: The University of Vermont

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Thomas R. Hudspeth

Abstract

The Chesapeake Bay Foundation, a non-profit, conservation organization with headquarters in Annapolis, MD, piloted a middle-school curriculum in the Fall of 1993. The *Chesapeake Bay Integrated Curriculum and Student Service Project* (now called *Chesapeake Choices and Challenges*) allows students to study the impact, sources, and solutions of an important Chesapeake Bay environmental problem and participate in a project aimed at reducing that problem in the students' community. This thesis presents the results of an evaluation of one school's implementation of the curriculum module "Your Watershed and the Bay." The evaluation measures changes in student environmentally responsible behavior and 7 associated variables: environmental sensitivity, internal locus of control, intention to act, feeling of personal investment, knowledge of issues, knowledge of action strategies, and skill in using action strategies. The evaluation also describes participant (teacher and student) reactions

to the module. Study methods include: pre- and post-module surveys, classroom observation, teacher interviews, and collections of student written work.

Statistical analysis of the surveys indicated that the experimental group, Stevensville Middle School 8th grade students, experienced significantly increased levels of internal locus of control, intention to act, feeling of personal investment, and knowledge of issues relative to the control group, Centreville Middle School 8th grade students. There was no significant change reported in environmentally responsible behavior or in the other 3 variables. Students and teachers were dissatisfied with some module components, but were generally satisfied with it overall. The interviewed teachers expressed intentions to use the upcoming, revised curriculum. This curriculum can serve as a model to be adapted and used by educators around country.

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Title: "Living Landscapes": a case study of environmental education in distance education for early childhood students

Author: Debbie Ledger **Date of Completion:** 1994

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

This case study presents the results of an investigation of the development and implementation of an EE teaching unit in a school of distance education at the early childhood level. The case study consists of 2 components. First, it describes the range of EE experiences (*in, about,* and *for* the environment) provided in early childhood distance education by evaluating the sample unit of Year 3 Language Across the Curriculum program "Living Landscapes" for its contribution to education *for* the environment. Secondly, it describes and analyzes the experiences of a teacher, home tutors, and students during the implementation of the sample unit for the first time. Data were gathered at a distance using documentary analysis, a questionnaire, and telephone interviews.

The major finding of the study revealed that the sample unit had a heavy emphasis on educational experiences *in* and *about* the environment, whereas education *for* the environment was only evident in 2 instances. The study found that opportunities for education for the environment in distance education were dependent upon the limitations distance education presents, the restrictions placed on content focus vis-à-vis the curriculum writer, and the early childhood focus of the unit. The findings showed that while the learning outcomes stated in the planned curriculum matched those achieved in the implemented curriculum, the extent to which they were achieved depended greatly on the interpretation of the written materials by the teacher and the support given by the home tutor.

The report concludes with a set of recommendation for EE initiatives within distance learning, especially concerning curriculum development, preservice and inservice teacher education, and further research.

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Title: How many salmon does it take to get to the fourth floor? Conflict and contradiction in environmental education

Author: Robert H. Olson **Date of Completion:** 1994

Institution: University of Wisconsin at Madison

Department or Program: Department of Education Policy Studies

Degree: M.A. (thesis) **Advisor:** Michael W. Apple

Abstract

This project provides an in-depth look at differing environmental curricula and their impact in the classroom and society. It combines many elements of critique to examine and deconstruct the teaching and curriculum of environmental education. This critique is carried out through an interdisciplinary approach to curriculum research that includes: narrative inquiry, critical theory, and post modernism. This combined approach explores issues of power/knowledge, influences in creating curriculum, and what are some of the underlying dynamics of environmental education. Three different models of learning are examined and analyzed as they represent a broad range of influence on environmental education that include: state, corporate, and student-centered methods of designing and implementing curriculum.

Title: Education *for* the environment through outdoor education: a case study of the Year 11 Mt. Barney Expedition, Hillbrook Anglican School

Author: Wendy Read **Date of Completion:** 1994

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

This case study research, based on a 4-day bushwalk through Mt. Barney National Park in South East Queensland as part of the Hillbrook Anglican School's outdoor education program, investigated the extent to which outdoor education experiences are able to contribute to education *for* the environment. The objectives of the study were:

- to determine the extent to which the Hillbrook outdoor education camping program contributes to the objectives of education *for* the environment,
- to describe specific environmental attitudes and behaviors that students displayed while participating in the 4-day outdoor education experience,
- to identify ways to further enhance a positive environmental ethic through the outdoor education program, and
- to assess the value of case study as an approach to research in outdoor education and EE.

The case study was conducted in 3 phases – before, during, and after the expedition – and used several data gathering methods. The researcher was an active participant-observer throughout the study.

Findings show that the Mt. Barney Expedition contributed to education *for* the environment in limited ways. While participants were immersed in experiences which heightened their sense of environmental awareness and appreciation, few opportunities arose to foster the EE goals of participation, skills, knowledge, and understanding. The study found that activities which can educate *for* the environment must be planned thoughtfully and implemented carefully during the outdoor education experience, rather than being allowed to occur haphazardly ad incidentally.

The significance of this research lies in its ability to 'capture the moment' and describe in rich detail the happenings of 1 particular outdoor education experience. It is anticipated that such information will assist outdoor educators in the process of developing outdoor education programs which support an ethos of education *for* an ecologically sustainable future.

Title: Washington Elementary School Handbook: environmental education curriculum using thematic units

Author: Mary Kaye Ristow **Date of Completion:** 1994

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources/WI Center for EE

Degree: M.S. (thesis) **Advisor:** Randall Champeau

Abstract

A questionnaire was given to teachers in Grades 1-6 at Washington School (Wisconsin Rapids) in the Autumn of 1992. Teachers listed the thematic units they taught and ways they would like to utilize an outdoor recreation site on school property. A handbook was designed which included 10 lessons for each grade, using ideas from various curriculum guides and incorporating children's literature. Care was taken to select lesson that took the student from an awareness level to citizen action.

In the Autumn of 1993, an inservice was given to introduce the teachers at the School to the handbook. Interviews in May 1994, indicated that half of the 12 teachers used the handbook to teach 1-3 of the 10 lessons designed for their thematic units. The other half taught 4-6 of the lessons. Two of the 6 grades participated in their citizen action project. The entire school participated in the 4th grade action project of prairie restoration.

Reasons given for not utilizing the handbook included: not aware there was a lesson for a unit until after the unit was taught; no longer teach the units listed in 1992; additional curriculum was added which was very time consuming; and the teacher's need to add only one or two new lessons to an existing unit each year.

It was recommended that teachers at various grades meet and select specific units to be taught annually at each grade. Additionally, environmental lessons could be designed by a core of teachers for these new units. Another recommendation included the creation of a district scope and sequence in EE. Finally, a resource teacher, with an expertise or interest in EE could aid and encourage fellow teachers at each school.

Title: Formative evaluation of teacher implementation of an environmental education curriculum

Author: Kathryn D. Row **Date of Completion:** 1994

Institution: University of Wisconsin - Madison

Department or Program: Environmental Studies

Degree: M.S. (thesis) **Advisor:** James Stewart

Abstract

A formative evaluation of *One Bird – Two Habitats*, a middle school EE curriculum, was conducted to determine patterns of teacher implementation of the materials. The primary goal of this evaluation was to revise the materials prior to final publication. The curriculum was evaluated during a pilot program in 1993 and data were collected to determine the extent to which the materials were implemented, to identify changes and modifications made during implementation, and to obtain teacher feedback regarding the materials. Methods used were primarily qualitative, including classroom observation, teacher surveys, and focus groups. Findings indicated several areas for revision and improvement, although overall, the curriculum was viewed as a success.

Title: Using literature as a tool to teach environmental education: a whole language approach

Author: David A. Scherer **Date of Completion:** 1994

Institution: California State University, Hayward

Department or Program: Teacher Education

Degree: M.S. (thesis) **Advisor:** Esther Railton-Rice

Abstract

This thesis provides a resource of young adult literature for Language Arts/English teachers to use in designing units that emphasize environmental concepts. The whole language approach was used for this purpose, although this approach is not necessary to teach EE in the language arts classroom.

A number of books that feature young adults growing into adulthood through some interaction with the natural world were reviewed. Following these reviews is a listing of EE categories found in the books. The author then provides a chart that correlated these categories and the books in which the categories can be found. Finally, as a demonstration of using young adult literature to teach EE, the last section of the thesis consists of a whole language thematic unit using the books reviewed in the thesis and other materials appropriate to the theme.

The books reviewed in the thesis include:

Julie of the Wolves by Jean George Craighead
My Side of the Mountain by Jean George Craighead
Canyons by Gary Paulson
Banner in the Sky by James Ramsey Ullman
A Star to the North by Barbara Corcoran
Downriver by Will Hobbs
The Secret Garden by Frances Hodgson Burnett
Island of the Blue Dolphins by Scott O'Dell

Where the Red Fern Grows by Wilson Rawls
Hatchet by Gary Paulsen

Title: A methodology for assessing effects of an introductory environmental history course on student worldviews

Author: Jennifer L. Tomsen **Date of Completion:** 1994

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** John F. Disinger

Abstract

The development and initial application of a methodology for assessing effects of an undergraduate environmental history course on student environmental worldviews was addressed in this thesis. A focus of the study was *triangulation of method*; open-ended interview data supplemented inferences from quantitative and qualitative data derived from responses to a *grounded survey instrument* developed specifically for the study. The methodology proved effective in addressing the study's research questions.

Title: Using environmental spreadsheet models to increase thinking skills

Author: Barbara H. Jackson **Date of Completion:** 1995

Institution: Western Washington University

Department or Program: Instructional Technology

Degree: M.Ed. (non-thesis) **Advisor:** Tony Jongejan & John Miles

Abstract

This project is a curriculum that demonstrates how to use a spreadsheet. It includes a workbook with lessons that model the interaction between systems, aid learners' development of problem solving skills, and provide a context to help learners strengthen the relationship between their studies and their life. The workbook product includes two chapters, a disk of spreadsheet templates, detailed directions, and sufficient subject information for issue analysis.

Environmental problems were chosen for analysis because they require application of knowledge from various subject areas and can help learners look at issues as a complex set of interactions rather than as a problem with one easy correct answer.

The theme that ties the worksheets together is the relationship between personal consumption and abstract global concerns. By analyzing problems such as household water use and garbage production, learners can begin to describe the cumulative effect of the more than 262 million individuals living in America.

Learner-centered Studies

Title: The effects of participation in an environmental action program on empowerment, interest, and problem solving skills of inter-city students

Author: James Nickell Bull

Date of Completion: 1992

Institution: University of Michigan

Department or Program: School of Natural Resources

Degree: Ph.D.

Advisor: William B. Stapp and Rachel Kaplan

Abstract

Problems and Methods: Seventh and eight grade students in two inner-city Detroit public schools chose a community environmental problem to work on and were given the power to direct the project itself. It was expected that participation in such a project would enhance students' feelings of empowerment, interest, and problem solving skills with respect to environmental issues. Both prior to the project, and after its completion, students were presented a list of 46 environmental problems and asked to rate how much they felt they could make a difference on them, and their degree of interest in them. Students were asked to rate the importance of a list of information sources and action choices with respect to several problem scenarios. Factor analysis was used to cluster the items into a smaller set of scales. Changes were assessed using these scales, as well as the individual items.

Findings and Conclusions: 1) Empowerment, interest, and problem solving skills were found to be dependent on the nature of the problem, rather than global traits. While this finding is consistent with a considerable body of literature, the domains seems to be much more specific than has been previously acknowledged. 2) Students were least empowered and interested with respect to urban nature problems. This was explained by lack of familiarity and the preference of teenagers for active social environments. 3) Participation in a problem solving project is not enough. Working on an environmental problem did not result in significant changes in empowerment, interest, or problem solving skill with respect to the factor analysis derived scales. However, when individual items were analyzed, disturbingly, the control group increased in empowerment, while the experimental group declined. It was concluded that in addition to taking action, students need experiences of success, adequate information and structure, and social support.

Title: Design, development, and validation of an instrument to assess the relationship between locus of control of reinforcement and environmentally responsible behavior in university undergraduate students

Author: Nicholas James Smith-Sebasto **Date of Completion:** 1992

Institution: The Ohio State University

Department or Program: School of Natural Resources/College of Education

Degree: Ph.D. **Advisor:** Rosanne W. Fortner

Abstract

The purpose of this research was to develop a reliable and valid instrument which could be used to assess the relationship between locus of control of reinforcement and environmentally responsible behavior in university undergraduate students. Scores on an inventory of self-reported performance of environmental actions carefully selected from the literature on environmentally responsible behavior and assessed by a panel of judges for their appropriateness to six categories of environmental action-taking served as the criterion variable. Using seven phases of development and employing the techniques of item-total correlations, factor analysis, regression analysis, discriminant analysis, and inter-item correlations the Environmental Action Internal Control Index (EAICI) was created and served as the predictor variable.

Scores on the EAICI and the self-report inventory of environmentally responsible behavior were analyzed via a Pearson Product Moment Correlation and by discriminant analysis techniques. The goal was to 1) determine what correlation existed between scores on the EAICI and the measure of reported behavior; and 2) determine if the EAICI could accurately predict extent of environmentally responsible behavior in individuals.

The following conclusions were drawn: 1) the EAICI displays substantial internal consistency (Cronbach alpha = .92); 2) there is a moderate positive correlation between scores on the EAICI and scores on the self-report inventory of environmentally responsible behavior ($r = .33$, $p < .01$); and 3) the EAICI successfully discriminated individuals according to the extent of their participation in environmentally responsible behaviors in 82 percent of the cases ($n = 850$).

The results seem to indicate that the EAICI can accurately predict self-report of environmentally responsible behavior. Recommendations for future research were presented.

Title: The environmental attitudes and knowledge of Year 11 students in a Queensland high school

Author: Bruce George Clarke **Date of Completion:** 1993

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

This thesis reports on a 1993 study of 148 Year 11 students in a Queensland state high school. The students were surveyed to determine the levels of their environmental knowledge and attitudes. The questionnaire was developed using published items wherever possible. The questionnaire was designed with a whole school community as the target group. However, only the Year 11 responses are reported in

this document. Demographical data on gender, region of birth, neighborhood type, and subject orientation were collected. Data on both conceptual and factual knowledge was collected. The attitudinal data were collected in 3 parts: an affective evaluation using the New Environmental Paradigm Scale as well as verbal commitment and actual commitment.

The students generally scored low on the knowledge scales, but registered highly positive attitudes and commitments toward the environment. The correlations generally reflect the trends in the literature. However, gender and academic orientation were not statistically related to attitude of knowledge. Residency (socioeconomic status determined by housing density) was found to be correlated with knowledge. Verbal commitment was correlated with gender. The scales were well correlated with each other. Actual commitment to the environment as a measure of environmental action was found to be related to both attitudes and knowledge. The study concludes with the recommendation that further work is needed on the low knowledge scores and further research is needed to support the work on EE curriculum.

Title: The development of an instrument to assess the environmental literacy of fifth grade students in Wisconsin

Author: Anna M. Quale **Date of Completion:** 1993

Institution: University of Wisconsin – Stevens Point

Department or Program: Natural Resources / Environmental Education

Degree: M.S. (thesis) **Advisor:** Daniel J. Sivek

Abstract

The purpose of this study was to develop a valid and reliable instrument with which to assess the environmental literacy of 5th-grade students in Wisconsin

Components of environmental literacy and the format of the instrument were determined by a review of relevant literature. Multiple choice items were utilized for the cognitive subtests. Likert-type items were utilized for the remaining subtests. Existing items from other instruments were adapted and new items written by the researcher and reviewed by a validity panel of educators familiar with EE and 5th grade students. Additionally, items were reviewed to detect gender, ethnicity, and/or residential bias. Four instruments were created and piloted on groups of between 162 and 171 5th-grade students. Each pilot instrument was divided into 4 subtests: cognitive, affective, predictors of environmentally responsible behavior, and behavior.

Reliability ratings of the first 3 subtests as determined by Cronbach's alpha coefficient ranged from .76 to .84 for the 21-42 items. The reliability of the behavioral subtest ranged from .36 to .76; possibly a result of the small number of items in this subtest: 6-8. An item analysis was performed and the most effective items or those determined to be well written and important to environmental literacy were included in the final pilot instrument. Of the 266 items piloted, 83 were selected for inclusion in the final pilot instrument, which was scheduled to administered during the following 1994.

The pilot instrument has a 4th grade reading level, can be administered by a classroom teacher within a 45-minute class, and can be scored mechanically.

Title: Topophobia and recreation activity preference

Author: Robert D. Bixler **Date of Completion:** 1994

Institution: Clemson University

Department or Program: Parks, Recreation, and Tourism Management

Degree: Ph.D. **Advisor:** William Hammitt

Abstract

Since contact with wildland environments is often through self-selected recreation activities, negative perceptions of wildlands are rarely observed; those that dislike these environments have no obligation to visit them. This study investigated whether negative perceptions of wildland environments limit desire to participate in traditional wildland recreation activities.

Middle and high school students from urban, suburban, and rural areas (n = 1,200) rated photographs of wildland and manicured park environments on whether they would like or dislike walking through each area. Wildland related fear was measured with an expectancy approach. Desire for modern comforts was measured by asking respondents how much modern comforts would be missed on a long camping trip. Finally, preference rating for a variety of wildland recreation activities were obtained.

Cluster analysis identified 3 groups based on environmental preference. Cluster 1 (n = 504) was composed of individuals with the highest wildland fear expectancy, desire for modern comforts, and preference for manicured environments, and the lowest preference for wildland environments. Cluster 2 (n = 471) was composed of individuals with moderate fear expectancy and preference for wildland environments and high desire for modern comforts and preference for manicured environments. Cluster 3 (n = 147) was composed of individuals with the lowest fear expectancy, desire for modern comforts, and preference for manicured environments and the highest preference for wildland environments. Cluster 1 had the highest preference for social activities and the lowest preference for wildland activities. Cluster 3 had the lowest preference for social activities and the highest preference for wildland activities. Based on the size of Cluster 1, a large percentage of young people may hold negative perceptions of wildland environments. The process of introducing individuals to wildland recreation activities may require considerable attention to helping them feel comfortable in wildland environments.

Title: Creativity, self-actualization, and androgyny: a correlational study in relation to environmental attitude and integration of self

Author: Suzanne Hutchinson **Date of Completion:** 1994

Institution: The Ohio State University

Department or Program: College of Education

Degree: Ph.D. **Advisor:** Robert R. Bargar

Abstract

This study sought relationships among the variables of androgyny, creativity, self-actualization, and environmental attitude. The investigation then proceeded into the theoretical constructs of the relationship.

A concurrent correlational study was used regarding the variables of androgyny, creativity, self-actualization, and environmental attitude. A relationship was found among the factors.

Theoretical implications are presented as a construct of wholeness in regard to the integration of self and human's relationship to the environment.

Title: An exploration of the relationship between environmental world view and environmental cartoon interpretation

Author: Elizabeth Archer Jaggers **Date of Completion:** 1994

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Rosanne W. Fortner

Abstract

This exploratory study compared the environmental world view and environmental editorial cartoon interpretation of two small samples of undergraduate students from two different Schools with The Ohio State University (Columbus). A paper and pencil questionnaire designed to obtain the students' world view and cartoon interpretation abilities was employed. Pearson Product Moment Correlation was conducted to determine the relationship between environmental world view and cartoon interpretation. T-test was also conducted to determine if there were statistically significant differences between the two sample groups. The data suggest that there was no statistically significant relationship between environmental world view and cartoon interpretation. In addition, the t-test indicates that the two sample groups are not different. Although the statistical tests were not significant, a substantial discussion of the literature and potential for future research are offered.

Title: Assessment and comparison of environmental knowledge and attitudes held by thirteenth grade and general and technical education students in the Republic of Burundi

Author: Albert Ndayitwayeko **Date of Completion:** 1994

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: Ph.D. **Advisor:** Robert E. Roth

Abstract

The purpose of this study was to produce baseline data about thirteenth grade students' environmental knowledge and attitudes toward the environment for the General and the Technical Education in Burundi, and to study the relationships of respondents' attitudes and knowledge to selected independent variables.

Three instruments were developed to test respondents' environmental knowledge and attitudes, and to gather information about their socio-demongraphic characteristics of age, gender, residential location, source of environmental information, type of school, parents' occupation and level of education.

The instruments were administered to 559 students in 28 schools in the Republic of Burundi. There were 20 General Education school representing 411 students in the sample and 8 Technical Education schools representing 148 students in the sample.

Findings indicated that significant differences existed between respondents' environmental knowledge and attitudes toward the environment with regard to five most compelling environmental issues in Burundi: 1) human population, 2) natural resources, 3) water quality, 4) ecological principles, and 5) global concerns.

On average, the General Education students outscored their Technical Education counterparts. It was also observed that the levels of environmental knowledge and attitude toward the environment were relatively low and very close for both groups of students.

Significant differences were found between the environmental knowledge and attitude toward the environment and the socio-demographic variables.

Respondents' highest scores on the knowledge and attitude instruments were observed on the issues related to natural resources. The lowest scores were obtained on the issues pertaining to water quality.

Title: Characterization of environmental locus of control and responsible environmental behavior in third grade students

Author: Carmen Ehrhardt Trisler **Date of Completion:** 1994

Institution: The Ohio State University

Department or Program: Educational Studies

Degree: Ph.D. **Advisor:** Rosanne W. Fortner

Abstract

This study characterizes the environmental locus of control (ENV-LOC) of third grade students in a purposeful sample, and examines student experiences and ideas that could point to factors that may contribute to the development of an individual's environmental locus of control. The study seeks to identify and/or confirm themes of characteristics in developing increased internality in environmental locus of control.

Two instruments were developed, the first a screening instrument using responses to pictures of the environment to identify internal or external environmental locus of control orientation. Reliability of the eight-picture test was .73 using a Spearman Correlation Coefficient. There was no significant difference in responses of three third grade classes (N=80) when compared using a Chi Square Test ($p > .05$). The second instrument developed was a standardized open-ended interview schedule to elucidate themes and patterns that may be related to 1) environmental locus of control orientation and 2) reported responsible environmental behavior in third grade students within this purposeful sample.

The ENV-LOC for the third grade students in this study can be characterized as predominantly internal. Based on reported behavior, the third graders with a strong internal ENV-LOC reported that they participated in a greater amount of travel, held membership in a greater number of organization, watched more environmental programs on TV, talked with their friends more about the environment, read more extensively about the environment, and had adult models with whom they could talk about the environment, to a greater degree that those students in the study with a strong external ENV-LOC. This may indicate that these activities are related to or enhance the development of a strong internal ENV-LOC.

Categories of environmental action reported by the third grade students in this study were Persuasive Action, Financial Action, Civic Action, Physical Action, and Educational Action. Physical Action was the category of environmental behavior most frequently reported.

Title: An assessment of the environmental education preferences and previous experiences of selected Ohio urban youth

Author: Vera Ellen Vollbrecht **Date of Completion:** 1994

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Robert E. Roth

Abstract

This study was an exploration of the environmental education (EE) activity preferences and previous EE and nature-related experiences of a small sample of urban youth residing in Columbus, Ohio. Two methods were employed in the study, a picture preference rating instrument and semi-structured open-ended interviews. It was found that the sample generally preferred indoor, passive EE activities, and, while reporting greater than 50% rates of participation in visits to EE sites and nature-related activities, had limited overall experiences learning about the environment while engaged in these activities.

Title: College students' environmental belief and value structures, and relationship of these structures to reported environmental behavior

Author: Richard R. Jurin **Date of Completion:** 1995

Institution: The Ohio State University

Department or Program: Science Education, Environmental Education, Environmental Communication

Degree: Ph.D. **Advisor:** Rosanne W. Fortner

Abstract

It has been noted by many scholars in the field of EE that higher levels of environmental awareness in a general population do not lead to observed higher levels of environmental responsible behavior. This was an exploratory study that investigated how environmental beliefs relate to self-reported environmentally-responsible behavior.

A convenient student sample (n = 110) was administered a 208-item instrument (Environmental Categorization Instrument - based on the Roper Survey "The Environment: Public Attitudes and Individual Behavior," 1990). The sample was segmented into 3 groups by cluster analysis. The groups were described with descriptive statistics and multivariate analysis, and from the cluster groups, a smaller sample (n = 10) was then chosen to be interviewed. The survey findings showed that most of the sample perceived themselves as environmentalists, and differed only in strength of attitudes.

The interview findings showed a marked disparity from the survey findings. This was attributed to the individuals' belief and value structures which were symbolic in nature and did not necessarily lead to actual behavior. This problem of "symbolic environmentalism" may explain the perplexing lack of environmental action. Symbolic schema do not seem to need expression as action, yet seem to serve as enhancers for the self. A "cognitive integrated system model" was developed from the literature and findings of this study to help explain this phenomenon. Environmental educators need to be aware that environmental awareness and environmental attitudes do not predispose people to act in environmentally responsible manners. An awareness of the type of belief structure should help educators and

communicators to focus messages that will be processed through central cognitive pathways; therefore, forming a more lasting change that matches the attitudinal components.

Title: Integration of affective dimensions into high school environmental education: a pilot study

Author: Teresa Mui Gek Mourad **Date of Completion:** 1995

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Joseph E. Heimlich

Abstract

This study proposed a conceptual plan for environmental education incorporating affective dimensions of culture and spirituality. Based on this plan, a treatment program was designed for a unit on soil. The study monitored high school students' perceptions of relevance, favorability, and importance of soil using a modified time-series design. The treatment program had the potential to increase environmental perceptions, particularly of relevance. Qualitatively, it contributed to the formation of new perceptions of soil and the expansion of existing ones. Development of affect-based approaches is needed to achieve the goals of environmental education agreed upon in the field.

Title: A survey of environmental literacy attributes in 5th-grade students from an Ohio school and the State of Wisconsin

Author: Dwight R. Wells **Date of Completion:** 1995

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Robert E. Roth

Abstract

This is a survey of environmental education (EE) outcomes among 5th-grade students from an urban Ohio school focusing on environmental studies and a comparison with 5th-grade students from Wisconsin. A survey instrument developed specifically for 5th-grade students by the Wisconsin Center for Environmental Education was administered to both groups of students. It was found that the Ohio students' environmental literacy attributes in the areas of knowledge, attitudes, personal responsibility, and environmentally responsible behavior were lower and more varied than the Wisconsin students. This disparity in reported EE outcomes may lend credibility to efforts aimed at brining national standards to environmental education.

Non-formal Programming Studies

Title: Big Frog Wilderness visitor study

Author: Cynthia Carlisle **Date of Completion:** 1992

Institution: Clemson University

Department or Program: Parks, Recreation, and Tourism Management (PRTM)

Degree: MPRTM (non-thesis) **Advisor:** Gina K. McLellan

Abstract

With recreational and non-recreational demand for wilderness increasing, better knowledge of visitors and their use of the resource becomes vital. Survey research on visitors to Big Frog Wilderness (BFW) in Cherokee National Forest provided baseline data on 1992 Summer use and user characteristics including length of visit, group size and type, activities participated in, availability of substitute sites, place of residence, advance planning, reasons for choosing the site, and socio-demographic descriptors.

To collect data, 5 trailheads were used as contact points. Trail registration cards provided an additional source for distribution of mailback questionnaires. Each trailhead contact was observed and interviewed to get as much information as possible, often providing responses to the entire questionnaire without having to employ a mailback method.

Some results concurred with data reported from western and southern wildernesses. The visitors were predominantly in-state, white males accompanied by family and friends for hiking trips of less than a day's duration into an area previously visited. However, many visitors characteristics differed from previous findings. At BFW, the visitors were older, with a mean age of 38. They were less well-educated with 38 percent having a high school education or less, and 10 percent having not graduated from high school. Reflecting the lower education level, employment occurred in atypical occupations, and income was lower than expected for wilderness users. Twenty-seven percent were employed in machine operation, crafts and precision, or transportation. Only 9 percent of the visitors were students. Forty percent had incomes greater than $25,000.

Differences between visitors to BFW and other wildernesses support the concept of managing each wilderness according to its own needs. The high proportion of repeat visitation by older, less well-educated, local users should influence the development of management and visitor education strategies.

Title: An action research study on the issues and skills involved in facilitating the program 'A Council of All Beings'

Author: Terri Kozak **Date of Completion:** 1992

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

This thesis is an account of an action research study in which the researcher aimed to: a) develop her appreciation of the issues involved in conducting "A Council of All Beings', and b) improve her skills in program facilitation.

The program "A Council of All Beings' was developed to enhance the commitment and resources of participants to the care and protection of planet Earth. The program helps participants to *mourn* and *remember*, to present another's perspective, and to discuss and make plans to work for the planet.

Data were collected by the facilitator using diaries, audio-tapes with critical friends, and by analyzing written and oral evaluations of participants. This process was developed over 4 cycles of preplanning, implementation, and evaluation for 2 workshops with adults and 2 with children.

The data, presented in narrative form, describe the experiences and reflections of each workshop. Reasons are given for revising the workshop formats and participants reactions to specific activities. The major issues to emerge from the data could be grouped under

- the processes of "A Council of all Beings',
- the development of the researcher's skills in facilitation,
- clarification of the researcher's personal disposition as an environmental educator, and
- the effectiveness of action research for this study

Co-facilitators were satisfied with the structure and processes of the adults' workshop although facilitators need to identify the optimum balance between activity, discussion, and discovery for children. The researcher feels confident with the development of her facilitating skills, and this is supported by the opinions of adult participants. Responses from the adults indicate the potential of the program for clarifying values about the environment and determining the role of participants, as individuals or collectively, in bringing about social change.

Title: Experiential environmental education – vision-impaired students and a senses trail

Author: Grant Brannock **Date of Completion:** 1993

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien & Helen Spork

Abstract

Vision-impaired students in Queensland in regular schools normally do not study EE as part of their academic curriculum. The purpose of this study was to investigate the benefits of using a senses

trail as a strategy of EE for vision-impaired students. This study involved 1 severely vision-impaired student and 3 blind students form the same secondary school. The students walked the Binna Burra Senses Trail in South East Queensland to evaluate its effectiveness with regard to increasing mobility, developing environmental awareness and sensitivity, and increasing environmental knowledge. Data were gathered using the techniques of interviewing and observation and the resulting data were analyzed in order to answer the research questions.

The findings indicate that

- various features of the senses trail were interesting and stimulating to individual students with few features interesting to all students,
- there was a high level of sensory agreement among the students,
- the students gained an awareness of environmental features through their remaining senses, and
- a core environmental knowledge was gained by all

When questioned at the completion of the senses trail 3 of the 4 students had experienced an attitudinal change with respect to how they felt about the trail environment because of their have walked the trail.

The findings indicate that senses trails have the potential to make a contribution to EE for the vision-impaired, which is broadly focused and various elements of which can be studied and experienced so that the approaches of education *in* the environment, *about* the environment, and sometimes *for* the environment are addressed. Based on these findings, some recommendations are suggested. They concern the design and construction of senses trails for the vision-impaired, and the education of vision-impaired students, especially regarding EE.

Title: Energy Education: Elementary Activity Guidebook and Interpretation for Children Guidebook: Theories into Practicing

Author: Meng-Fen Lui **Date of Completion:** 1993

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (non-thesis) **Advisor:** Robert E. Roth

Abstract

The "Energy Education: Elementary Activity Guide Book" is a collection of 60 elementary energy education activities that is organized by concept, objective, grade level, and subject. Subjects include: sources of energy, uses and applications, forms and conversions, environmental and economic impacts, limits to supply, conservation and management, and the future.

"Interpretation for Children Guidebook: Theories into Practicing" consists of four parts: introduction, learning concepts, interpretive approaches, interpreting for children, and evaluation. It is targeted toward interpreters responsible for informal/nonformal programming for children.

Title: An evaluation of the collaborative school review process of an environmental education center

Author: Noeleen Rowntree **Date of Completion:** 1993

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

Formal evaluation of EE centers is often overlooked. The collaborative school review (CSR) process provided an opportunity to implement a review model within an EE center. Attempts were made to include the principles of EE within the review process. This study provides an illuminative study of the review conducted at 1 EE center in Queensland. The review adopted, implemented, and finally evaluated the CSR process.

The evaluation of the CSR process at the EE center was based on the perspectives of the participants. This study presents how the center organized the review and summarizes the participants' reflections of the process. Participants' perspectives were gathered and analyzed during and after the review process.

Findings show the value of the collaborative, participatory action research approach to the evaluation/review process. Participants valued the process, but questioned the mixed messages which were being received from the education department which is responsible for the review process. There appeared to be a mismatch of rhetoric and practice with the CSR process. This suggests that the education system needs to listen actively to schools and centers and, in light of this rhetoric/practice gap, implement school and center recommendations at the regional and central systems level. Failing this, the system may need to replace CSR with an alternative review model which is truly representative of the facility being reviewed. Two separate methods of review are suggested with 1 review method relating to the specific needs of the corporate sector of the Education Department and a second method of review specific to the needs of schools/centers.

Title: The measurement of zoo and aquarium education directors' philosophies of adult education

Author: Jason Joseph Diem **Date of Completion:** 1994

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Joseph E. Heimlich

Abstract

The purpose of this study was to measure American Zoo and Aquarium Association (AZA) member institutions' education directors' personal philosophies of adult education. This measurement was based on their scores on the Philosophy of Adult Education Inventory (PAEI) developed by Zinn (1983). The PAEI was part of a mail questionnaire sent to all 163 education contacts at AZA institutions. Personal philosophies may influence the decisions education directors make concerning educational programming and activities for adult visitors. The overall response rate was 92%. The Progressive orientation was the dominant philosophy followed by the Humanistic orientation.

Title: Toward positive environmental action: a case study in Belize

Author: Katherine Marie Emmons **Date of Completion:** 1994

Institution: University of California, Santa Barbara

Department or Program: International Education

Degree: Ph.D. **Advisor:** James H. Block

Abstract

This study tested a proposed model of EE to explore the interrelationships of 5 EE areas (grasp of concepts, sensitivity and attitudes, action skills and procedures, empowerment and ownership, and recreation) and their combined effect on positive environmental action. It is often the case that people in developing countries have few opportunities to participate in environmental protection. Thus, a need was identified for programs to integrate participation with affective and cognitive learning. An approach to EE was sought that recognized students as *thinking-feeling-acting* human beings.

A non-formal, field EE program in Belize was developed, implemented, and evaluated to test 2 forms of the model. One form of the model emphasized a "tacit," or less intense instruction. The other form emphasized an "explicit," or more intense instruction. In each case, participant observation data were collected to determine students' opportunities for learning in each area. Data from questionnaires and interviews were collected before and immediately after the implementation to determine the outcomes and patterns of change.

The programs for both groups achieved positive results. They were more consistently positive with the explicit program, apparently due to both the clear learning objectives and instructional methods, and to a more thorough integration of affective and cognitive learning areas. Both programs benefited from a concentration on positive environmental action in the form of an action project, and from an emphasis on outdoor experiences. Both program also effectively combined elements of recreation into the activities, which helped to make the experience a positive one for the students.

The interpretation of the findings allowed the strengthening and revision of the researcher's proposed theoretical model. It illuminated how the different goal areas can interact within an EE program, and also showed how the model could be improved. A revised model included a circular relationship between the different areas of learning and environmental action, suggesting the continuous opportunities for students to learn to take action are needed. Students develop as they take action, and action goal adapt and change as new information, values, and skills are acquired.

Title: The role of public education and public involvement in endangered species recovery programs: a look at Region 3 of the U.S. Fish and Wildlife Service

Author: Katherine K. Quimbach **Date of Completion:** 1994

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources

Degree: M.S. (thesis) **Advisor:** Richard Wilke

Abstract

In 1973, the Endangered Species Act was passed. Under this act, a recovery plan must be developed for each species listed as threatened or endangered. A recovery plan lists the actions

necessary to help each species become a viable, self-sustaining population. Until recently, public education and involvement (PE/I) was not considered a primary component in the recovery of a species.

Through the use of telephone interviews and checklists, recovery programs in Region III of the U.S. Fish and Wildlife Service were surveyed regarding their use of PE/I. Everyone interviewed (n=33) believed that the public should be informed about their state's endangered species. The four most commonly used methods to educate the public are agency magazine articles, media coverage, endangered species publications and guest speaking. The two main methods of public involvement are private landowner contacts and the use of volunteers for surveying and monitoring.

When incorporating PE/I into recovery programs, 30.3% (n=10) stated it should be done routinely, 27.3% (n=9) said it should be done on a case by case basis and 42.4% (n=14) favor a combination approach. Fifty-two percent (N=17) thought that PE/I is a responsibility of their position and all saw it as a responsibility of their state division. Concerning the future use of PE/I in endangered species recovery programs, 67% (N=22) said it would increase, 6% (N=2) said it would decrease and 27% (N=9) said it would stay the same.

Recommendations include the use of general education in every recovery plan, the use of public involvement based on the needs of the species, the clarification of recovery objectives to be met by the use of public education/involvement, an increase in formalized landowner contact programs and the evaluation of current methods being utiliz[illegible]d.

Title: An illuminative evaluation of the effectiveness of the programs offered at Bunyaville Environmental Education Centre in achieving the goals of environmental education

Author: Jill Strachan

Date of Completion: 1994

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis)

Advisor: John Fien

Abstract

This thesis reports on an evaluation of a selection of programs at an EE center in achieving the goals of EE developed by the Tbilisi Declaration in 1977 and which form the basis of the Queensland Department of Education Environmental Education Curriculum Guide 1993. They constitute education *for* the environment, whereby students are educated to participate in a democratic, socially critical society.

A Collaborative School Review in 1993 at Bunyaville EE Centre indicated a need to review programs to reflect the goals of EE. The programs developed by the center to address the goals are the focus of the study.

Research comprised 2 stages of data gathering. Stage 1 involved the collaborative evaluation of the written/planned programs by staff members using the objectives and principles of EE as the analysis criteria. This revealed different EE approaches used in topic and thematic programs at the Centre. Topic-based programs focus on education *about* and *in* the environment, whereas thematic programs include education *about*, *in*, and *for* the environment through students undertaking positive action. The second stage involved an analysis of the enacted thematic program of "Possum Bangles' Bush Gathering" through case studies of Year 2 students from 2 schools participating in the program, using participant observations and interviews.

The most important feature of the program involved the students taking the next step which was to develop personal action statements to be carried out as a result of what occurred in the program. The students were, thereby, given opportunity to act for the environment.

Title: The development of an activities guide for the enhancement and facilitation of the use of Pheasant Branch Creek by secondary science and social studies teachers

Author: Debra Zinke Weitzel **Date of Completion:** 1994

Institution: University of Wisconsin – Stevens Point

Department or Program: College of Natural Resources/WI Center for EE

Degree: M.S. (non-thesis) **Advisor:** Daniel J. Sivek

Abstract

EE literature has documented the need to expose children to outdoor experiential education; however, the percentage of teachers taking advantage of outdoor teaching sites and field trips in small. Middleton High School and Kromrey Middle School in Middleton, WI share the Pheasant Branch Creek Nature Preserve, an underutilized, but potentially effective outdoor teaching station. This paper details an inservice held at Middleton High School in October 1992, and the resulting lessons and report.

The purpose of the inservice was to identify existing curriculum resources and to develop lessons utilizing Pheasant Branch Creek as an outdoor teaching station. The project was designed to involve students (grades 7-12, Middleton-Cross Plains School District) from the various disciplines within science and social studies and culminate in a student-generated annual report.

The inservice was held on 4 consecutive Wednesdays, immediately after school, and lasting 2 hours. Taking part in the project were 4 high school teachers (1 social studies and 3 science) and 1 middle school science teacher. As a result of the inservice, 4 lesson plans were developed and the first annual report of Pheasant Branch Creek was produced.

This paper discusses some of the problems and frustrations encountered in implementing a project of this kind.

Title: Incorporating local school district curriculum into National Park Service programming

Author: Nalani A. McCutcheon **Date of Completion:** 1995

Institution: University of Wisconsin – Stevens Point

Department or Program: Environmental Education

Degree: M.S. (thesis) **Advisor:** Michael Gross

Abstract

Since the formation of the first national park in 1872, and the development of the National Park Service (NPS) in 1916, people have been using the parks for a variety of education pursuits. Programming specifically for formal K-12 school groups did not begin, however, until 1968 with the release of the National Environmental Study Area, the National Environmental Education Development, and other related programs.

These programs, though promising, failed quickly due to lack of presidential and administrative support for the NPS's educational outreach efforts. In 1988, however, President George Bush declared his administration to be dedicated to both environmental and educational concerns. The NPS seized this opportunity to again develop formal educational programming. An Education Task Force was developed, and it recommended: 1) an administrative history and database of existing programs be developed to

determine the status of education Servicewide, and 2) an effort be made to provide formal educational programs for children that integrate NPS research with local curriculum.

This project addressed these recommendations at a regional level with the development of a database reflecting the status of education in the NPS's Midwest Region and the development of a training manual to aid interpreters in incorporating curriculum objectives of local school districts into NPS program offerings. To facilitate the development of the manual, a process outlined by a NPS document Programming for School Groups: An Interpreter's Guide was developed at 3 parks in the region. The process and its results were evaluated to develop recommendations to ensure the success of this latest education outreach effort.

Title: A proposed curriculum integrating science, outdoor education, and adventure

Author: Michael Oster **Date of Completion:** 1995

Institution: The Ohio State University

Department or Program: College of Education

Degree: M.A. (non-thesis) **Advisor:** R. Paul Vellom

Abstract

This project was the development of a science education/adventure education curriculum. The curriculum is designed for a 10-day trip through Oregon with two overarching objectives. The first is that students will emerge form the curricular activities with improved scientific literacy. The second is that students will have completed the study with strengthened and positive self-concept. Specific performance objectives and assessment methods, construction for self-directed learning, and a system of student experts are considered in the curriculum.

Title: Development of instruments to assess a 4-H camp program: knowledge, process skills, and affective disposition

Author: Laura Anne Rehrig **Date of Completion:** 1995

Institution: Florida Institute of Technology

Department or Program: Science Education (Environmental Education)

Degree: M.S. (non-thesis) **Advisor:** Thomas Marcinkowski

Abstract

The purposes of this study were to develop, validate, and field test instruments for assessing the effects of a 3 day/2 night 4-H camp environmental education program on each of the following student characteristics: knowledge in 3 specific classes (Wildlife Habitats, Ecology, and Aquatic Systems I), process skill abilities, and attitudes and feelings toward the environment. The field test sample consisted of 69 students tested before and after the program to measure their level of afective dispositions, knowledge of aquatic systems and process skill abilities.

Statistical analyses of the findings indicated the following: there was not a statistically significant change in students' affective dispositions; there was a statistically significant in students' knowledge of

aquatic systems and in their process skill abilities. Test-retest and internal consistency analysis of reliability indicated high reliability for the Affective Dispositions Scale but fairly low reliability for the Aquatic Systems I Knowledge Test and the Process Skills Test. Analyses of the item difficulty and item discrimination indexes along with students' response frequencies to test items indicated that about 14 test questions were either too easy or too difficult.

From the conclusions and inferences, it is recommended that revision and changes should be made to specific test items, and evaluation of the Aquatic System I class should be conducted to determine its effectiveness, and future research should be conducted to further field test the instruments. Findings from future research will aid in further instrument development as well as aid in further assessment of the effectiveness of and implementation of specific programs at Betsy-Jeff Penn 4-H Education Center.

Title: Evaluation of the effectiveness of the "Protecting Our Environment, Environmental Awareness Course" as implemented by Motorola, Inc.: a case study

Author: Christine A. Rietz **Date of Completion:** 1995

Institution: University of Wisconsin - Madison

Department or Program: Institute for Environmental Studies

Degree: M.S. (thesis) **Advisor:** Sharon Dunwoody

Abstract

As part of an effort to discover a more effective educational method, this study explored the use of an interactive, skill-oriented workshop (*Protecting Our Environment* or POE), as a means of increasing the environmental knowledge of an international manufacturing company's employees. The workshop promoted knowledge gain and critical thinking skills, key components of any successful environmental learning experience.

In order to evaluate the effectiveness of the POE workshop, the study monitored the amount of knowledge gained by more than 200 people who participated in 12 workshops held in Schaumburg, Illinois, during fall 1993. Gain was assessed by using surveys to measure environmental knowledge levels before and after participants completed POE. A follow-up survey that measured knowledge retention was used to evaluate whether the workshop had a lasting impact on participants. Qualitative data, gathered at each of the 12 POE sessions, and other independent variables, such as prior knowledge, gender, education level, perceived importance of environmental issues, job relevance of environmental issues, and information use, were looked at for their potential effects on knowledge gain.

Results from this evaluation suggest that the amount of knowledge gained overall by participants was significant. After three months, some of the knowledge that had been gained was lost. However, the remaining levels of knowledge were significantly higher than pre-test levels, so there was net gain. The observational data provided information used to develop a comprehensive yet practical list of suggestions for future environmental education efforts.

Overall, I feel the course proved to be a beneficial experience for those involved in the study. The real test of the workshop's effectiveness, however, will depend upon the extent to which the information gained is used by participants to address future environmental issues.

Others

Title: The ethics of environmental education: a technique for living

Author: Jo-Anne Ferreira **Date of Completion:** 1991

Institution: Griffith University

Department or Program: Division of Humanities

Degree: M.A. (non-thesis) **Advisor:** Ian Hunter and John Fien

Abstract

This project analyzed the concepts of ethics and the philosophical traditions which underlie and inform environmental policy. In particular, this analysis focused on ecophilosophers' conception of ethics. The central objective was to shift the focus of debate from the valuational context of competing positions to a concern with the ethical means by which individuals come to incorporate environmental values in the actual conduct of their lives.

Three main issues were addressed in order to question central assumptions about the nature of ethics in EE. First, the manner in which ecophilosophers conceptualize ethics and 'an environmental ethic' was examined. Second, a more comprehensive understanding of ethics was proposed. Finally, an assessment was made of whether this broader concept of ethics is evident in EE. In this way two sets of relations were explored: the relationship between environmental philosophy and the teaching of ethics in EE, and the relationship between the teaching of ethics in EE and a practice-based theory of ethics. The assessment of EE in this project was text-based. Two programs were analyzed: Only One Earth (1988) from the World Wide Fund for Nature and Earthkeepers (1987) by Van Matre and Johnson of the Institute for Earth Education.

Chapter 1 analyzes contemporary definitions of ethics. It also examines the debates over ethics occurring amongst ecophilosophers. Chapter 2 discusses various approaches to EE ad assesses the way in which they have been influenced by ecophilosophy. Chapter 3 discusses Foucault's analysis of the morality-ethics relation. Chapter 4 assesses two approaches to EE in some detail and examines the mechanisms they use for constructing ethical abilities.

Title: Telling tales: storytelling and adult environmental education

Author: Elizabeth Baker **Date of Completion:** 1992

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (non-thesis) **Advisor:** John Fien

Abstract

This project is divided into two parts. Part A was a review of the environmental and adult education and storytelling literature. A series of principles for critical adult EE were developed. Central to

critical adult EE is the concept of empowerment. This concept and its implications for adult EE were explored.

The origins and importance of storytelling were reviewed and aspects of the storytelling experiences and the roles of the participants are described. The final chapter outlines the potential value storytelling as a means for critical EE.

In Part B some of the issues involved in using storytelling in critical EE workshops are briefly discussed. This discussion is followed by an example of an 8-week program that utilizes storytelling, both in the form of folktales and of participants' experiences.

Title: Environmental education as a tool for promoting the integration of hearing and hearing-impaired communities, and for enhancing self-concept in the hearing-impaired

Author: Diane Lostroh **Date of Completion:** 1992

Institution: Grifith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (thesis) **Advisor:** John Fien

Abstract

With the assertion that EE should be for all, and should be an ongoing process from birth to the grave, this study endeavored to include a social group which were excluded from EE programs. The hearing-impaired are a unique social group who must be given an equal opportunity to participate in environmental and social decision-making processes. This study outlines and discusses a number of factors which must be considered by educators of the hearing-impaired. These factors include learning difficulties, problems associated with low self-concept and the need for social integration. Teaching strategies appropriate for educating the hearing-impaired through the use of other senses, experiential learning, and brain hemispheric stimulation are discussed and EE strategies which complement these are outlined.

The ultimate goal of this study was to enhance self-concept in the hearing-impaired while promoting the integration of hearing and hearing-impaired communities. EE was used as a tool for achieving this goal. Action research was used to monitor teacher and student progress, and data were collected in the form of a teacher's diary, audio-taped student discussions, and written student comments.

Students became involved in an active investigation process which allowed the examination of a local issue. It was found that through experiencing success during the learning process, students learned to feel good about themselves and their new-found knowledge. This success was perceived as an enhancement in self-concept by the teacher as researcher. The researcher also endeavored to promote the integration of hearing and hearing-impaired communities through the use of participatory strategies. It was noted that although the attempted integration activities proved relatively successful, barriers to communication were seen as possible hindrances to the integration processes and, therefore, the learning process.

Title: Has science education significantly contributed to the promotion and development of environmental education?

Author: Paul Dudley Parkinson **Date of Completion:** 1992

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (non-thesis) **Advisor:** John Fien

Abstract

There has been steady development in EE from the 1970s to the present, allowing it to pervade all curriculum subjects taught. It could be argued the contribution of science to environmental education has been historically significant.

In light of this statement, this study examined the question: has science education significantly contributed to the promotion and development of environmental education? In order to achieve this, this paper is presented in 5 sections under the chapter titles of: historical perspectives – selected developments, some current trends, sustainable development – a future direction, summative statement and conclusion, and emergent issues.

Each chapter reflects the evolution, relationship, and contribution of science education to EE. The last 2 chapters outline personal conclusions and observations drawn from the discussion.

Title: Gender equity in the national curriculum: the discursive construction of gender in social and environmental education

Author: Gary Lehn **Date of Completion:** 1993

Institution: Griffith University

Department or Program: Faculty of Education

Degree: BTch, H (non-thesis) **Advisor:** Parlo Singh

Abstract

The question addressed through this study focused on how social justice concerns for gender equity in the Australian state are expressed in the consultative draft of the 'Studies of Society and Environment' national curriculum statement.

The analyses examined the way gendered identity, signified by such terms as woman or girl, is expressed in the document. That is, what does it mean to be a woman or girl in the context of the document. Further, what is the place of women and girls in the social order of Australia as set out in the curriculum. The analysis also addresses the question of whether the gendered social order expressed in the curriculum is supportive of gender equity, or whether the curriculum supports the maintenance of existing gendered privilege in Australia.

This thesis describes the research process with a background to educational debates in Australia, and developments in national educational policy including the development of a national curriculum. Chapter 2 reviews EE literature for the purpose of identifying theoretical concepts suitable for the analysis of gender and gender equity in curriculum. A theoretical framework for the analysis is developed in Chapter 3. The theoretical framework draws on concepts from post-structuralist and feminist theories and Bernstein's (1990) theory of pedagogic discourse. The framework is applied to the analysis regarding the

research question and summarized in Chapter 5. The implications of this research for theory, policy, and educational practice are discussed.

Title: Tourist tales: the social construction of Orangutans

Author: Constance L. Russell **Date of Completion:** 1993

Institution: York University

Department or Program: Faculty of Environmental Studies

Degree: MES (non-thesis) **Advisor:** John A. Livingston

Abstract

Applying social construction theory to the study of other animals, research was conducted on ecotourist constructions of Orangutans. Based on a case study of 21 ecotourists participating in 2 Earthwatch expeditions to primatologist Birute Galdikas' Orangutan Research and Conservation Project in Indonesian Borneo, data was collected through participant observation, interviews, and post-expedition questionnaires. Three constructions or "stories" dominated: Orangutan as child, Orangutan as pristine, and Orangutan as photographic collectible. The cultural and historical specificity of these constructs and their implications for conservation and EE are discussed.

Title: Asking the questions: assessment guidelines for environmental education building projects. An exemplary commitment to sustainable development

Author: Michael Yeates **Date of Completion:** 1993

Institution: Griffith University

Department or Program: Master of Environmental Education

Degree: MEnvEd (non-thesis) **Advisor:** John Fien

Abstract

This research report recognizes the necessity for the language of EE and environmentalism to be understood, not only in education, but also in current development practice, where the decisions which 'directly or indirectly have a major impact on the environment' are made, such that current decisions may be informed by environmental values and concepts, and thus assist in the introduction and acceptance of sustainable development. Many of the concepts such as 'environment' and 'ecologically sustainable development' (ESD) are new or changing and are conceptual rather than factual. They, therefore, have many meanings. Through references to current literature, meanings for various concepts and values of EE were sought such that those not well acquainted with the aims and goals of EE may take an active and more understanding role in the integration and acceptance of ESD.

The study also provides a view of EE from a development orientation, a view which will assist and inform those not involved in development practice. The study is practice related, referring the application of ESD processes and EE aims and goals to the procurement of an EE building project as a potentially exemplary outcome of the committed application of the ESD process.

Title: Roosting birds: an audiovisual presentation for urban multicultural environmental education

Author: Ryder W. Miller **Date of Completion:** 1994

Institution: California State University, Hayward

Department or Program: Teacher Education

Degree: M.S. (non-thesis) **Advisor:** Esther Railton-Rice

Abstract

Pigeons, European Starlings, and English Sparrows, classified as roosting birds by the Society for the Prevention of Cruelty to Animals, are a worthwhile subject for interpretation by environmental educators because they are so ubiquitous, and the interpretation of the subject can be a starting point for environmental educators to explore related subjects like harmful non-indigenous species, and animal rights movement, inquilines, and prejudice.

A 19-minute videotape exploring this subject was produced in the San Francisco Bay area using the facilities of the Instructional Media Center at California State University, Hayward. The videotape did not take a risk or advocacy perspective, but was interpretive by including elements of both. Rich in historical and cultural imagery, and presenting conflicting viewpoints, the videotape provided teachers with a starting point to explore many related subjects.

Because roosting birds are considered "non native" species, and have a history of discrimination in America, the feasibility of using the story of roosting birds as an allegory to teach about ethnic experiences was examined. Findings of a survey of urban teachers showed mixed feelings about using the subject in this way. Faculty California State University, Hayward strongly cautioned the videotape producer to be wary of comparing ethnic background to undesirable life forms. This advice was heeded and the result was a videotape with no direct connection made between ethnic experiences and the historical experiences of roosting birds.

A prototype of the final videotape was evaluated by faculty at California State University, Hayward and urban teachers at a summer institute for 4th-8th grade teachers. The findings of a survey of them showed that the prototype was effective in reaching the targeted goals, i.e., introducing students to the history of roosting birds and providing an effective way to get students interested in the subject, providing a starting point for exploration of related subjects like harmful non-indigenous species, urban wildlife and animal welfare philosophy, and effectively exploring viewpoints representing both environmentalists and animal rights activists.

Since the final version of the videotape is so similar to the prototype, it should be an effective means to reach the educational goals reached by the prototype.

Title: An assessment of school administrators' knowledge of, attitudes towards, and degree of support for environmental education in Wisconsin public schools

Author: Catherine E. Rossow **Date of Completion:** 1994

Institution: University of Wisconsin - Steven Point

Department or Program: Department of Natural Resource Management

Degree: M.S. (thesis) **Advisor:** Randall J. Champeau

Abstract

Wisconsin has mandated that environmental education (EE) be included in public school curricula. In February, 1994, surveys were mailed to all Wisconsin public school principals (N = 1,818) and 308 directors of curriculum (DOC) to determine their knowledge of, attitudes towards and degree of support for environmental education in their school/district. Administrators were also asked to identify barriers to EE in their school/district and to prioritize needs. Surveys were returned by 50% of the principals and 68% of the directors of curriculum.

Over 70% of the administrators reported having had at least 1 course in EE; a third reported more than 2. Over 85% strongly agreed with the goals for EE, and 95% agreed that EE should be infused into the existing curriculum. Fifty-nine percent of the principals and 78% of the DOCs reported that their district had a written curriculum plan for EE. Over half reported their school/district did not have an EE coordinator, specialist or chairperson and of those that did, more than 50% described the position as voluntary with no release time. Most administrators reported that they distribute EE information (70%), offer encouragement to teachers teaching about the environment (75%) and support teacher requests to attend EE workshops not sponsored by the district (75%). Principals with 3 or more courses in EE reported taking a higher degree of action to support EE than principals who have not attended any EE courses. According to administrators, the top ranked barriers to EE were lack of funding, time, and support from teachers. Over half indicated they personally did not have the time to promote EE and 45% felt there was not enough class time. Administrators felt the top needs were more time (63%), funding (52%), and in-service workshops for teachers on EE (39%).

Title: The potential role of virtual reality in environmental education

Author: Gregory L. Taylor **Date of Completion:** 1994

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** John F. Disinger

Abstract

The purpose of this study was to determine the acceptability and possible role of virtual reality (VR) in the field of environmental education. A survey instrument was developed and administered to environmental education practitioners and virtual reality developers. The chief findings of the study were 1) the sample population of environmental educators indicated an acceptance of VR as a teaching tool in environmental education and 2) VR applications that allow students to have experiences not available in the physical world were perceived as beneficial to environmental education.

Title: Reinventing suburban housing: urban planning for environmentally appropriate affordable housing in Denmark

Author: Christopher Currie **Date of Completion:** 1995

Institution: York University

Department or Program: Faculty of Environmental Studies

Degree: MES (non-thesis) **Advisor:** Alex Murray

Abstract

This paper uses three Danish case studies of Environmentally Appropriate Affordable Housing (EAAH) as a basis for exploring means which may reduce the environmental impact, improve affordability, or both, of new suburban housing. The paper explores Danish planning structures, implementation and policy and how they supported the realization of the Danish case studies. Difficulties in establishing environmental priorities, deciding between competing objectives and the value of using qualitative non-economic analysis are articulated. Integrative planning and policy approaches involving a high degree of resident and stakeholder participation and education are found to be preferable and less expensive than purely technological approaches to EAAH. The paper concludes with some "keystone" issues which assisted the Danish case studies to succeed and a brief exploration of the potential of some of these concepts in Ontario.

Title: Exploring common grounds for environmental education in the U.S. and Pakistan to make recommendations for negotiating barriers in Pakistan: a comparative study

Author: Sabiha S. Daudi **Date of Completion:** 1995

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (thesis) **Advisor:** Joseph E. Heimlich

Abstract

This study was conducted in order to explore common grounds for environmental education in the United States and Pakistan to make recommendation for negotiating barriers to the development of the environmental education movement in Pakistan. Data were collected in Pakistan and the United States using different techniques in the two countries. A descriptive survey for Pakistan and formal interview for the United States were carried out in the two countries. The outcomes were then analyzed and data were triangulated in order to discover common grounds and shared concerns for the environmental education movement in the two countries. Based on these findings, recommendations were made for a more progressive development of environmental education in Pakistan.

Title: Private sector programs in the public sector: will they work? A case study of quality service through partnership in the Ohio Department of Natural Resources

Author: Jennifer Lee **Date of Completion:** 1995

Institution: The Ohio State University

Department or Program: School of Natural Resources

Degree: M.S. (non-thesis) **Advisor:** Robert E. Roth

Abstract

For decades, people have been asking "why can't public sector organizations operate more like business?" As a result, many public sector organizations have tried to adapt private sector management theories. The theories have been applied in many areas, although predominantly in budgeting and human resources.

The literature pertaining to implementation of private programs in the public sector is varied in terms of opportunities for success. There are those experts who think that the public and private sector organizations are fundamentally the same in their structure and organizational methods. However, there are also experts who think that there are significant, and often insurmountable, differences between the two sectors.

Quality Service through Partnership is one public sector implementation of a private sector theory. In 1990, the Ohio Improvement Task Force presented a recommendation report which defined areas for improvement within the state's government agencies. One recommendation suggested the use of total quality management (TQM) to improve service provision. The State of Ohio is currently utilizing TQM as borrowed from Xerox to improve the services provided by state agencies. In an effort to make TQM more acceptable to state agencies, the name was changed to Quality Service through Partnership (QStP). However, the content of the program remains the same.

The Ohio Department of Natural Resources (ODNR) is one of many state agencies in Ohio which have been handed QStP as the new management tool to be implemented unilaterally. Through interviews with ODNR employees, there appears to be significant problems in the use of business philosophies and assumptions in a governmental organization.

Title: Environmental impact of tourism on national parks in the United States

Author: Chih-Yung Wang **Date of Completion:** 1995

Institution: University of New Mexico

Department or Program: Parks, Recreation, and Environmental Education

Degree: Ph.D. **Advisor:** Paul S. Miko

Abstract

The purposes of this study were to identify perceived negative tourism impacts on the natural environment within national parks, environmental knowledge necessary for the preparation of future professionals, and the most effective methods for educating tourists about the protection of the natural environment. Park Superintendents representing all 51 national parks belonging to the National Park System of the United States were invited to participate in this study.

Responses to a mailed questionnaire from 41 superintendents indicated that 21 national parks had water quality problems related to tourism, 24 had air quality problems related to tourism, and 35 had vegetation (flora) or wildlife (fauna) problems related to tourism. In addition, of the 29 Superintendents participating in this study that were from national parks that contained significant coast/ shoreline areas within their boundaries, 20 had environmental problems that were related to tourism. The majority of the Superintendents surveyed perceived further pursuit of environmental knowledge or education to be either important or extremely important. Of 40 knowledge areas investigated, 11 were identified as being the most important in the preparation and training of professionals in disciplines related to environmental preservation and conservation: Communication, Ecology, Biology, Environmental Planning, Botany, Natural Sciences, Management, Public Relations, Environmental Ethics, Aquatic Ecology, and Earth Science. Twenty–nine of the 41 national park superintendents rated park tourists' knowledge about the natural environment to be poor or somewhat poor. In–school presentations were rated as the most effective method for educating future park tourists about the natural environment.

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1	6	A study of user patterns and maintenance guidelines for the Alum Cave Bluffs and Chimney Tops Trails, Great Smoky Mountains National Park
1	6	Flora and fauna of Po National Park, Upper Volta, West Africa
1	5	Ecology of central Washington semi-arid lands: a documentary film
1	5	A conceptual development plan for a commercial outdoor education/recreation enterprise in the Adirondack Mountains of NY

1	4	Freshwater fish pond culture and management
1	4	Environmental education – Moraine State Park: a development plan
1	3	The analysis of the development of an interpretive center museum to interpret environmental dynamics: a case study of the Man, Time, and Environment Museum at the Chippewa Nature Center, Midland, MI
1	3	An interpretive prospectus for the Clemson Experimental Forest,Clemson University, SC

Formal Programming Studies

International EE

13	41	Integrating conservation and development: how to operationalize the concept and why
13	40	Nature and culture in Thailand: the implementation of cultural ecology in environmental education through the application of behavioral sociology
12	34	Essential learnings for environmental education in Malawi
12	33	Defining the universal in international environmental education through a content database
10	19	A communication model to produce slide-tape sets for extension activity among low-income farmers in Guatemala, Central America

Learner-centered Studies (Student-centered Studies in Volumes 1-13)

13	24	One bird – two habitats
13	23	Incorporating statistics and environmental data in teaching high school mathematics
13	22	GIS interactive tutorial design and evaluation for Earth systems science education
13	21	Effects of wildlife cartoons on children's perceptions of wildlife and their use of conservation material
13	20	The effects of a four-day residential environmental camp on the attitudes and knowledge of fifth graders
13	19	Affect of a resident outdoor component for leadership instruction in leadership participation in school sponsored organizations
12	20	A slide-tape program introducing the cave environment to sixth-grade outdoor education participants
12	18	The impact on the achievements of sixth-grade students by their teaching a science unit to third-grade students
12	17	Exploring with our senses – primary grade activities for environmental education
12	16	Enhancing meaningful learning in an environmental education program: a case study of a class empowered through the use of Novak's and Gowin's principles of learning how to learn, concept mapping, interviewing, and educating
12	15	Effects of information upon moral reasoning levels of eighth graders confronted with moral dilemmas
12	13	The degree of student engagement in meaningful learning using cooperative learning and student selected subject matter in environmental studies
12	12	Cooperative learning and environmental education: an investigation
12	11	Assessing the effectiveness of a municipal solid waste management hypercard simulation

12	10	An evaluation of the social and spiritual values of a week-long outdoor education program
12	9	An environmental education curriculum for sixth-grade field trips
11	13	The influence of a wilderness course on the self-actualization of the students
11	12	The C.R.A.P. game (Community River Action Plan): a simulation game on river pollution
11	12	Enhancing meaningful learning in an environmental education program: a case study of a class empowered through the use of Novak's and Gowin's principles of learning how to learn, concept mapping, interviewing, and educating
11	11	An investigation of the effectiveness of computer-assisted instruction and outdoor education in teaching critical thinking with regard to environmental education concepts
11	10	Cooperative learning and environmental education: an investigation
11	10	Effects of information upon moral reasoning levels of eighth graders confronted with moral dilemmas
11	9	The effects of an environmental education program using live animals on the knowledge and attitudes of school children toward wildlife
10	11	Integration of environmental goals and the New York State Science Syllabus for middle schools with emphasis on the non-regents student
10	10	Evaluation in Michigan middle schools of a science education curriculum based on Ruffed Grouse
10	9	Environmental education revisited: an action research approach to school-based community environmental problem solving
10	9	Drawing: a medium used in sensory awareness after a planned hands-on experience
9	16	A survey of outdoor education activities for limited English proficiency students
9	15	Sea of Images: a study of the relationships amongst students' orientations and beliefs, and science instruction
9	14	Holistic environmental education and the New Brunswick Upper Elementary Curriculum
9	13	An initial evaluation of the educational impact of Project Wild on students & instructors of wildlife education in Pennsylvania
8	14	Where do I fit in? Discovering our role in the use of natural resources
8	13	A systematic evaluation of an environmental investigations course
8	12	Nature and education: learning form the world around us
8	11	An evaluation of the Nature Scope environmental education curriculum series
8	11	The development of an instrument for evaluating the effects of an environmental education program on young children's environmental attitudes: a pilot study
8	10	A comparison of two residential environmental education workshops regarding knowledge of and participation in environmental action
7	11	A survey of facets of ecology teaching in Illinois general biology classrooms
7	10	The presentation and evaluation of a community transportation curriculum module: international environmental education
7	10	Integrating children with disabilities through cooperative, experiential programs and adaptable environments
7	9	The unity of learning: a systems perspective on environmental education

7	8	Environmental perceptions and behaviors of university students enrolled in a freshman level environmental problems course
6	13	The implementation and evaluation of microcomputer simulations in a college-level environmental education course
6	12	An assessment of ecological knowledge gain resulting from a resident environmental education program
5	19	An environmental curriculum guide emphasizing children's literature and art, K-3
5	18	The development of instruction materials for teaching about selected northeast Wisconsin game birds and their habitat to elementary students utilizing a natural area
5	18	Teaching outdoor science and environmental education using the station approach
5	17	Environmental education through use of children's literature in the primary grades
5	17	Comparative study of the attitudes of fifth and sixth graders in selected outdoor activities
5	16	Industrial arts activities for natural trail construction
5	16	Comparison of environmental attitudes among international and American students studying in the United States
5	15	Study of the content of population education in the United States
5	15	The effectiveness of an outdoor resident living experience on attitude change of upper elementary grade level students in the area of environmental education
5	14	Development and evaluation of an environmental education curriculum
5	14	The effects of teaching conservation of resources to primary age children
5	13	Changes in students' attitudes towards conservation resulting from outdoor education: a case study
4	20	Content analysis of pictures drawn by preschoolers in response to a nature interpretation program
4	19	A study of differences between a single discipline approach and an interdisciplinary approach in teaching environmental education at the middle school level
4	19	An autotutorial approach to the teaching of water quality at the secondary level based on Planet and Kephart philosophies
4	18	Internal locus of control as a prerequisite to environmental action taking: an assessment of the Youth Conservation Corps
4	18	The development of an instrument to measure energy use attitudes among junior high school students
4	17	The development, teaching, and assessment of the concept "away" in primary grade children
3	36	Experiences related to oceanic knowledge and attitudes of tenth grade students in Virginia
3	36	The effect of an environmental education course on student behavior patterns
3	35	The effect of process instruction on problem identification skills in environmental education
3	35	Student attitude change as a result of the presentation of materials representing various opinions on strip mining
3	34	Effect of an environmental social science class on the values of urban students
3	34	Ways to approach outdoor education with grades one through three
3	33	The College Park High School Earth science camping program
3	33	A pilot study measuring pre- and post-test results of a cognitive test for environmental education

3	32	The isolate in sociometrically designed groups at resident summer camp
3	32	An environmental living program on a pioneer homestead for fourth and fifth graders
3	31	A study of moral judgment, values, and locus of control development in students of environmental education
3	31	Approaching outdoor education in a city setting
3	30	Assessing marine environmental awareness of high school students
3	30	The Garfield Elementary School environmental education experimental program
3	29	The development of a primary grade curriculum for the playground environment
3	29	An investigation of the effectiveness of Project Learning Tree at Lincoln Middle School
3	28	Outdoor activities for seventh grade remedial mathematics students
3	28	The influence of an outdoor environmental residential experience on attitudes
3	27	The development of a curriculum for high school students on a backpacking trip through the Sierra
3	27	Curriculum guide in outdoor education for Oakland Diocese Elementary School Systems
3	26	Evaluating educational experiences: a proposed theoretical model and experimental analytical instruments
3	26	Effects of audio-visual presentations on environmental awareness
3	25	Effects of an environmental studies curriculum on seventh and eighth grade volunteers
3	25	Environmental education through camping for the inner city schools
2	20	The effects of using environmental case studies in a taxonomic biology program to influence the environmental attitudes of tenth grade students
2	19	The effect of an outdoor adventure program on the self-esteem of delinquent adolescents
2	19	Environmental education for the inner-city
2	18	Comparative effects of an environmental awareness and an environmental action instructional model on the overt environmental behaviors of eighth grade students
2	18	Recreation in the New York State Prison System
2	17	The effects of an outdoor interpretive program on the self-concepts of educable mentally retarded boys
2	17	Change in attitudes toward four selected environmental issues of enrollees in two eight-week Youth Conservation Corps camps
2	16	The effects of participation in a creative dramatics program on the self-concept of mentally-retarded children in a six-week day camp
2	16	The web: an environmental education program for summer camps
2	15	The effect of a four-week primitive camping experience on inner-city children's perceptions of the natural environment
2	15	Self-esteem and the United States Youth Conservation Corps enrollee
2	14	Environmental education in an economics context: effects on students' knowledge and attitudes
2	14	The influence of an outdoor environmental residential experience on attitudes
2	13	Middle school students' value clarification in environmental education as a function of autonomous research
2	13	Adult-child cross-age environmental education
2	12	The effects of a water conservation instructional unit on the values held by sixth grade students concerning water conservation
2	12	The effects of participation in a naturalist aide program on the self-concepts of senior citizens

1	24	Student attitude change as a result of the presentation of materials representing various opinions on strip mining
1	23	Attitudinal changes as a result of outdoor experiences
1	23	The effectiveness of slide presentations and field trips as methods of instruction for environmental education
1	22	Environmental attitudes of sixth graders after the integration of environmental education into the language arts curriculum
1	22	An evaluation of environmental attitudes developed in a graduate methods class as compared to an undergraduate methods class
1	21	An evaluation of environmental education attitude change of students in seventeen fifth grade classes in Fox Chapel School District, Pittsburgh, PA, based on one-week residential experience
1	21	A study of the sixth grade environmental education program in Herkimer County, NY
1	20	The effects of a simulation game on the attitudes of college students enrolled in an environmental management course
1	20	Prior membership in outdoor-oriented organizations: its relationship to environmental attitudes in young adults
1	19	A study of the relationship between superstition and perception of the natural environment among children in Marion, IN
1	19	Supplementary environmental education reading program: as a motivating technique to improve reading comprehension

Non-formal Programming Studies (Parks & Camps: Users & Interpreters in Vols. 1-13)

13	13	The use of the residential summer camps for promoting responsible environmental behavior through environmental education
13	12	Promoting responsible environmental behavior through earth education camps: Sunship Earth and Earthkeepers
13	11	A pilot interpretive program within the Duke Forest
13	10	Outdoor recreation participation of Maryland residents in Maryland state forests and parks: an analysis of participation barriers
13	9	Nature field trips in Alameda and Contra Costa counties of California
13	8	A model of affective progress in nonformal education
13	7	An evaluation of nature center managers' perceptions of their job responsibilities with regards to educational background, services/resources offered, number of years as administrator, and budget of the nature center
13	6	An education program for the Duke University Primate Center
13	6	Development of a soil exhibit for the National Zoological Park
13	5	Development of a handbook for evaluating interpretive services
13	3	Conservation awareness through an environmental education program at the Morro do Diabo State Park, Sao Paulo State, Brazil
13	3	Design of a heritage education program at Fort Point
12	4	The effect of quality, quantity, and interpretive diversity on program attendance in Indiana state parks
12	3	Cost effectiveness and interpretive programs, personnel, and agencies
11	8	An evaluation of Snowdonia National Park, Wales from the perspective of inhabitants and visitors using the importance-performance marketing technique
11	7	The influence of physical site attributes and motive fulfillment on camps in satisfaction in Pennsylvania state parks

11	6	Evaluation of the educational effectiveness of interpretive exhibits for adult visitors to Old Woman Creek National Estuarine Research Reserve and State Nature Preserve
11	6	An evaluation of the school and field components of the outreach program of Old Woman Creek National Estuarine Sanctuary
11	5	Visitor attitudes and perceptions of use management in Rocky Mountain Nation Park
11	4	The development of a preliminary marketing process for an environmental center
11	4	Guidelines for interpreting air quality and similar issues
11	3	An importance-performance analysis of a residential summer camp experience
10	7	The use of multidimensional scaling and Euclidian regression in the analysis of outdoor recreation use patters: a pilot investigation
10	6	Profiles of and associations among learning styles and teaching characteristics of environmental interpretive technicians and learning styles of campers in Pennsylvania state parks
10	6	Evaluation of the educational effectiveness of interpretive exhibits for adult visitors to Old Woman Creek National Estuarine Research Reserve and State Nature Preserve
10	5	An evaluation of the school and field components of the outreach program of Old Woman Creek National Estuarine Sanctuary
9	5	A study of the differences between nature center users and other visitors to the Stone Valley Recreation Area
9	4	Use of importance-performance analysis to evaluate a visitor center
9	3	The importance of shrub and clumped vegetation in supporting desirable songbirds in managed urban parks and open spaces
9	3	Knowledge and opinion score comparisons utilizing live and mounted predator programs
9	2	Characteristics of large groups and leaders of large groups using the High Peaks Wilderness Area
9	1	Beliefs about nature centers among Shaver's Creek Nature Center members/visitors and nature center non-visitors
8	6	Theme park use by older persons: an exploratory investigation
8	5	Social isolation among National Park Service rangers
8	4	Marketing interpretive programs: a description of interpretive product use markets at national historic sites in the northeast United States
8	4	Importance of wildlife to state park visitors
8	3	Development and testing of an interpretive services planning process for the Green Mountain National Forest
7	7	Environmental education at Camp Durant: a pilot project
7	6	Interpretive booklets and activities for the YMCA Outdoor Center
7	6	An assessment of visitor interests and evaluation of conducted interpretive programs of Everglades National Park
7	5	Environmental interpretive centers of the United States: an ethnographic study
6	6	Nonformal environmental education in natural resources management: a case study in the use of interpretation as a management tool for a state nature preserve system
6	6	The effects of canoe tripping on the self-concepts of campers in a long-term therapeutic wilderness camp

6	5	Determination of differences regarding motives for camping, management preferences, and preferences for programing expressed by experienced and first-time campers at Pinchot and Prince Gallitzin State Parks in Pennsylvania
6	5	Audience attention as an indication of the quality of an interpretive presentation on a nature trail
5	9	School camps and environmental education in the inland northwest: a descriptive analysis
5	8	An organizational plan for the development of a nature center at Haywood County Hospital, North Carolina
5	8	The development of self-guided materials for a Nature Conservancy sanctuary
5	7	The urban environmental center
5	7	The use of time by organized tour groups
5	6	Familiarity and adaptation: a study of family attendance at interpretive activities
4	13	Communication messages on a natural resources management controversy
4	13	A public relations study of law enforcement at Shenandoah National Park
4	12	An evaluation of the impact of visitor orientation procedures at Old Sturbridge Village
4	12	Evaluation of the use and effectiveness of two types of non-personal interpretive media in Yellowstone National Park
4	11	Planning for winter recreation: a case study of Elk Island National Park
4	11	Assessing visitor participation/nonparticipation in interpretive activities through unobtrusive measures
4	10	An assessment of the enjoyment and interest level for senior citizens in sensory and non-sensory interpretive hikes
4	10	As assessment and explanation of the importance, extent, and management of vandalism in urban parks in Columbus, OH
4	9	Injuries and illnesses in outdoor education: a study o an Ohio upper elementary resident outdoor education program
4	9	A study of user patterns and maintenance guidelines for the Alum Cave Bluffs and Chimney Tops Trails, Great Smokey Mountains
4	8	Participation and nonparticipation in interpretation: a study of people, places, and activities
3	20	The environment of small residential care facilities
3	19	A basis for interpretive planning: the demographic and behavioral characteristics of visitors to the Eleven Point National Scenic River, Missouri
3	19	The zooseum: an integrated institution for the future
3	18	Fine arts summer resident camp resource guide
3	18	Three environmental living curriculum models
3	17	Visitor response to interpretation at selected historic sites
3	17	Interpretation in the urban national park
3	16	Management of visitor use at Inglewood Bird Sanctuary
3	16	Banff: visitor activities and regional growth
3	15	Motive, management preferences, and perceptions of crowding of backcountry hiking trail users in the Allegheny National Forest of Pennsylvania
3	15	The relationship of satisfaction to visitor activities in a park setting
3	14	Developing an interpretive booklet – Porcupine Mountains State Park
3	14	The history of the Hayward Area Shoreline Environmental Education Project
3	13	A study of camping objectives of Mennonite organized resident church camp directors, campers, and parents in comparison to Spahn's (1958)
3	13	An evaluation of three nature interpretation techniques

3	12	An economic evaluation of the Wildland Recreation Program in the Bathurst Pilot Project
2	7	Directory of interpretive and environmental education areas and facilities in Idaho
2	7	User perceptions, attitudes, environmental preferences: an aid to coastal planning
1	16	Visitor analysis at the Cincinnati Zoo with implications for interpretive planning
1	15	An analysis of selected park visitor motivations for attending environmental interpretation programs
1	15	The function of interpretation as perceived by park visitors and interpreters
1	14	Criteria for the development of interpretive nature trails for the visually impaired
1	14	A survey of resource materials for environmental interpreters
1	13	Active language in interpretive trail signs and rules leaflets: its effects on visitor enjoyment and information retention
1	13	The effects of an interpreter's nonverbal behavior on park visitors during a natural history presentation
1	12	Interpretive objectives form audience expectations at selected parks and museums
1	12	System for measuring visitor participation in interpretive programs in Indiana state parks
1	11	The origin and characteristics of visitors at selected publicly financed recreation areas in Indiana
1	11	Interpreting a museum exhibit: the message effectiveness and cost effectiveness of alternative audio messages
1	10	Characteristics of the visitors to the environmental education area at Land Between the Lakes, Kentucky
1	10	A basis for interpretive planning: the demographic and behavioral characteristics of visitors to the Eleven Point National Scenic River, Missouri

Others (Resources, Administration, and Others in Volumes 1-13)

13	51	The TVA network of Centers for Environmental Education: an examination of factors that contribute to success
13	50	The Toxic Substances Control Act: a training course
13	49	The push of urbanization on agricultural land: McHenry County – a case study
13	48	Navajo national forestry
13	47	Florida: paradise redefined: the rise of environmentalism in a state of growth
13	47	Evaluation and recommendations for North Carolina's stream watch citizen monitoring program
13	46	Environmental education programs of selected Cooperative Extension Service personnel
13	44	Developing a system for evaluating the effectiveness of inspector training, Phase 1, identification of evaluation techniques and development of model training program
13	43	The center/network concept of environmental education: a qualitative investigation of the Memphis State University Center Environmental/Energy Education
13	42	Bicycle commuting in the Chicago metropolitan environment: potentials, benefits, and a planning scheme
12	40	U.S. Forest Service logging programs near Bandalier National Monument, NM
12	39	An oral history of environmental education/outdoor education, based on leaders at "a gathering of the elders"

12	38	A needs assessment instrument for environmental education
12	37	The misdirected mandate: environmental policies and rulemaking
12	36	The foundation of the Forest Service's inability to protect ancient forests
12	35	Comparing Federal and State environmental planning laws: what NEPA lacks in substantive law exists in its progeny
11	26	A study of land-use planning and politics in Oregon in 1988: the comprehensive statewide goals
11	25	An oral history of environmental education/outdoor education, based on leaders at "a gathering of the elders"
11	24	Enforcement of the Federal Pesticide Law: an assessment of Oregon's program
11	24	The misdirected mandate: environmental policies and rulemaking
10	29	A study of the environmental education activities of the Conservation Districts of Pennsylvania
10	28	Review of Yahara Watershed lakes by 15 water resources management graduate students
10	27	Revenue recovery strategies for the Alaska Public Use Cabin program
10	26	The politics and science of environmental protection: the case of forest-ungulate management in the Nimpkish Watershed on Vancouver Island, BC
10	25	Policies to mitigate the social problems caused by the tourist industry: application to Penticton, BC
10	24	The efficacy of the World Heritage Convention as a planning tool for the rigorous protection of natural sites
10	23	Drilling sour gas wells, risk management alternatives for northeast Calgary, AB
10	22	An alternative approach to regional planning: a carrying-capacity framework for achieving a visible region
9	28	Guide to county animal waste management plans by 17 water resources management graduate students
9	27	The care and use of live animal collections in environmental education
9	26	Thematic mapper assessment of a vegetated island: case study of Long Island – Adams County, IL
9	25	A decision analytic framework for evaluating acid deposition control policy options
9	24	A history of natural resources management in the National Park Service
9	24	An investigation of internship programs at environmental centers in Pennsylvania
8	24	Paradigmatic change and environmental education: toward new societal foundations
8	23	A philosophy of environmental education and its implementation in the Orinda Union School District
8	23	A methodology for analyzing written evaluations of the Jennifer M. McSweeney Land Use Planning Course for local officials
8	22	The development of theoretical and practical aspects of program evaluation for program improvement in environmental education
7	25	The mercury pollution of High Rock Lake: a case study analysis of policy decisions with implications for environmental mediation
7	24	The impact of urban amenities upon the location of selected corporate headquarters and research and development facilities in central Ohio
7	24	Impacts of abandoned surface coal-mined lands on the local population in southwestern Indiana
7	23	Community development users' guides of environmental laws affecting HUD projects

7	22	A program of public information and public participation for improved Black Bass management
7	22	Appreciation of human trophic relationships: alternative ways to increase public awareness of nutritional ecology
7	21	Toward a humanistic response to the social pathology of nuclearism – educating for peace within the behavioral-empowerment approach
6	28	An investigation of noise as an environmental hazard
6	27	Visual assessment of children's and environmental educators' urban residential preference patterns
6	27	A study of vegetative ecology of Burley Mountain in the southern Cascades of Washington
6	26	Virginia: residential solar thermal energy policies and recommendations
6	26	Valuing the environment: new trends in legislation and economic theory
6	25	A program development and evaluation model derived from nature centers with school programs
6	24	Measuring the influence of vegetation on solar retrofitting an urban neighborhood
6	24	Forest fire frequency in a central eastern Washington Pinus ponderosa stand
6	23	An economic analysis of hunter education in North Carolina
6	23	An assessment of environmental education in West Virginia
5	35	Snowmobiling in Minnesota: growth and government response
5	35	Land use classification terminology: variation in meaning and implications for public policy
5	34	Source separation as a solid waste management option: four case studies
4	35	Approaches and methodologies for environmental impact analysis
4	35	The Environment Conservation Authority 1970-1977: an assessment and analysis
4	34	An evaluation research proposal for a public information campaign on urban forest management
4	34	Mountain PLAY (packet for learning about your mountain)
4	33	Establishing criteria for comprehensive planning of environmental education programs
4	33	A survey of the current use of information and education within natural resource management agencies
4	32	The development and application of program materials for the urban park and recreation recovery program, a Federal recreation grants-in-aid program, Heritage Conservation and Recreation Service
3	58	Extending environmental learning through a visual-verbal process: some activities for second grade students using soil animals
3	58	The potential for managing various insects and their habitats for educational purposes
3	57	Eco-tour
3	57	A guide to the common wild shrubs and vines of Pennsylvania
3	56	Farm, food, and environmental education, a manual for elementary school teachers
3	56	Crafts and simple teaching devices for environmental education
3	55	The nature and extent of raptor shooting in the Northeast with recommendations for an education program
3	55	Evaluation of a teacher's guide integrating a school garden with curriculum

3	54	Henry David Thoreau: a qualitative naturalist's approach to nature study
3	54	The development of marine science mini-units for use on the secondary level
3	53	The history and development of the Department of Natural Resources at Ball State University, Muncie, IN
3	53	The environmental impact as related to financial institutions
3	52	A study of selected environmental education coordinators in the Commonwealth of Pennsylvania
3	52	Improving access to master's theses in environmental education
2	28	Unit planning and the District Ranger
2	27	The continuing education needs of wildlife professionals employed by New York State
2	27	Legal aspects of health and safety for operating youth camps
2	26	Management possibilities for the Haw River Division of the Duke Forest with emphasis on recreational trail development
2	26	An experimental trail guide system for use in background management
2	25	The dynamics of domination: a metalogue concerning exploitation as rooted obstacle to total environmental quality
2	25	Public involvement in Forest Service planning with particular attention to Uwaharrie National Forest's Land Management Planning Project
1	34	Human responses to silvicultural practices
1	33	An investigation of the status of land use planning education in environmental education master plans
1	33	The effects of dispersed recreational activities on the microbiological quality of forest surface waters
1	32	Evaluation and impact of planning and development under the Washington State Shoreline Management Act
1	32	A survey of the adult environmental education courses offered by the Ohio Public School system
1	31	Resource recovery in a rural community
1	31	Environmental impact of the Hanford Operations
1	30	Assessing regional meeting participant's opinions on environmental education implementation strategies for Ohio
1	30	A study of personal participation in action for environmental quality
1	29	A bibliographic analysis of the literature of environmental education
1	29	The role of the environmental education consultant in an urban setting: Toledo, OH
1	28	Outdoor recreation participation levels with cohort analysis
1	28	Status of environmental education programs in public school districts of the Commonwealth of Pennsylvania

Institutions with EC/EE Degree Programs

Institution: Andrew Jackson University
School of Environmental Studies
10 Old Montgomery Highway
Birmingham, AL 35209

Program: Environmental Studies

Contact: Dr. Jackie D. Batson
205-871-9288
205-871-9294 (fax)

Degree(s): M.A., M.S., Ph.D.

Description:

Master's programs created to assist students in identifying and developing appropriate solutions for major environmental problems. Program content is diverse in theory and practice. Coursework covers critical issues, activism, regulations, conservation, and a general overview of relevant science and technology. Focuses on disparate points of view and sometimes conflicting recommendations.

Doctoral program designed to equip the serious environmentalist with knowledge necessary to provide responsible leadership in business, industry, or government. Highlights environmental regulations, law, and strategic management. Includes technical and non-technical courses.

Institution: Antioch College
Glen Helen Outdoor Education Center
1075 State Route 343
Yellow Springs, OH 45387

Program:

Contact: Carolyn Cosgrove

Degree(s):

Description:

Graduate students earn 10 credits going through 5 months of on-the-job training as naturalists, working small groups of 5th-8th grade students who come by classes to our resident center. The facility is located in a 1,000-acre nature preserve owned by Antioch University.

Institution: Audubon Expedition Institute/Lesley College
P.O. Box 365
Belfast, ME 04915

Program:

Contact: Sanna McKim

Degree(s): M.S.

Description:

Graduate students participate in an intensive learning community structure while traveling throughout the U.S. and Canada. Through first-hand visits with the people and places on the forefront of today's ,most critical environmental issues, students gain a deep understanding of the complexity of our environmental dilemmas, and the ability to envision and enact creative and innovative solutions for the 21st century.

Institution: Ball State University
College of Sciences and Humanities
Department of Natural Resources and Environmental Management
Muncie, IN 47306

Program: Natural Resources and Environmental Management

Contact: Dr. Charles O. Mortenson

Degree(s): M.A., M.S.

Description:

Offers 4 focus areas at the master's degree level:

- environmental protection
  - solid and hazardous waste
  - water quality
  - ambient/indoor air quality
- resource management and environmental policy
  - outdoor recreation and park management
  - land use and reclamation
  - soil resources
  - environmental systems analysis
- environmental communication and education
  - natural resource interpretation
  - public information and education
  - teacher certification in conservation and environmental studies
- general natural and environmental science

Institution: Bemidgi State University
Professional Education
Box 44
Bemidgi, MN 5660

Program: Environmental Education and Interpretation

Contact: Dr. Ray A. Nelson

Degree(s): M.S.

Description:

Offers a 24-quarter credit area in philosophy, methodology, and practicum in environmental education and interpretation for leaders and/or interpreters in the Curriculum and Instruction degree program.

Institution: California State University, Hayward
Department of Teacher Education
Hayward, CA 94542

Program: Environmental Education and Interpretation

Contact: Dr. David Stronck or Dr. Esther P. Railton-Rice

Degree(s): M.S.

Description:

The program for teachers, naturalists, and outdoor recreation leaders includes one-third foundations courses, one-third EE, and one-third electives. The specialization may be combined with methods in teaching science. A special master's degree in EE can be tailor-made.

The EE courses illustrate the relationship of environmental concepts, attitudes, and actions to all school subjects. All courses are presented through active, direct experience, and group discussion.

Institution: Clemson University
College of Forest and Recreation Resources
Department of Parks, Recreation, and Tourism Management
263 Lehotsky Hall
Clemson, SC 29632

Program: Recreation & Parks Management

Contact: Dr. H. Jesse Grove

Degree(s): M.S.

Description:

Students are prepared to function effectively as historic/natural site interpreters themselves, and/or to utilize the talents of staff interpreters in the role of a recreation and park administrator.

Institution: Deakin University
Faculty of Education
Geelong 3217, Australia

Program: Environmental Education

Contact: Dr. Ian Robottom
61 (0) 52-271481
61 (0) 52-272014 (fax)

Degree(s): M.Ed. & Ph.D.

Description:

Ph.D. studies are offered in the following topic areas:

- curriculum development in EE
- professional development
- feminist studies
- research methodologies in EE

Master's studies are offered in the following topic areas:

- foundations of EE
- trends and issues in EE
- EE and social change
- research in EE

Institution: Duke University
School of the Environment

Program: Environmental Education

Contact: Ms. Bertie Belvin
Duke University Office of Enrollment Services
Box 90330
Durham, NC 27708-0330

Degree(s): M.E.M., M.F., Ph.D.

Description:

The School of the Environment at Duke University is a graduate professional school dedicated to interdisciplinary educational and research programs focusing on the quality of the Earth's environment and the sustainable use of its natural resources. The School offers 2-year professional master's degree programs in biohazard science; coastal environmental management; environmental toxicology, chemistry, and risk assessment; forest resource management; resource ecology; resource economics and policy; and water and air resources. With faculty approval, individualized program concentration may be developed to focus on EE and EC. Study leading to a doctoral degree is offered through the Duke University Graduate School. A new Center for Environmental Education offers a variety of continuing education courses and workshops for environmental managers, executives, and educators.

Institution: Florida Institute of Technology
Science Education Department
150 West University Boulevard
Melbourne, FL 32901

Program: Environmental Education

Contact: Dr. Thomas Marcinkowski
407-768-8946

Degree(s): M.S., Ed.S., Ph.D.

Description:

The Science Education Department houses programs in Environmental and Science Education, as well as Mathematics and Computer Education. The Environmental Education Program currently offers a M.S. in Environmental Education. The Science Education Program offers M.S., Ed.S. and Ph.D. degrees, with content concentrations or technical areas in: (a) environmental science (e.g., environmental science or resource management); (b) biology (e.g., ecology or marine biology); and (c) oceanography (e.g., coastal zone management). Students enrolled in any of these Science Education Degree Programs may take environmental education courses to meet departmental or elective coursework requirements.

The M.S. in Environmental Education is a 33 credit hour, non-thesis program for individuals with experience and/or active interests in formal or non-formal EE. It is designed to expand and improve environmental education teaching skills, and to provide graduate training in both environmental content and educational research. To this end, the program requires graduate study in:

- environmental education: 12 credits, consisting of a Foundations Course and three Methods Courses;
- environmental content: a 12 credit content concentration designed around a unifying disciplinary, resource, or problem-oriented theme (e.g., ecology, estuaries, water quality); and
- educational research: 9 credits, consisting of a Research Methods and a Statistics course, and a non-thesis research project.

Institution: Griffith University
Graduate School of Environmental Sciences & Engineering

Program: Master of Environmental Education

Contact: Dr. John Fien
Faculty of Environmental Science
Nathan QLD 4111 Australia

Degree(s): M.Env.Ed.

Description:

The Master of Environmental Education Program provides professional development for environmental educators in schools and field study centers and in community education settings such as government departments, industry, journalism, and NGOs. The aims of the program are to assist students to develop:

- concepts and skills for studying and resolving environmental questions, issues, and problems
- an understanding of the nature, scope, purpose, and processes of EE
- the ability to develop, present, and evaluate EE programs in a variety of educational settings
- skills in critical reflection, action research, and educational and social change which will extend their personal and professional development
- the ability to exercise professional leadership in EE

The highly flexible program is designed to cater to the wide range of students' professional interests, study needs, and academic background. It is available to both full-time and part-time students.

Students are required to complete 120 Credit Points (CP) to satisfy the program. Full-time students enroll in 4 course per semester. part-time students study at the rate of 2 course per semester. A 120 CP program requires 1 1/2 years' full-time study or 3 years part-time study.

Institution: McNeese State University
Department of Biological and Environmental Sciences
P.O. Box 92000
Lake Charles, LA 70609-2000

Program: Environmental Science

Contact: Dr. Bruce Wyman
318-475-5669
318-475-5677 (fax)

Degree(s): M.S.

Description:

Program is mainly public health and industrial pollution oriented, with a growing emphasis in aquatic toxicology. Some internships are available with industrial facilities. Thesis option requires 24 hours of instruction. Non-thesis option requires 36 hours of instruction.

Institution: Montclair State University
School of Conservation
1 Wapalanne Road
Branchville, NJ 07826

Program: Environmental Studies/Environmental Education

Contact: Dr. Randall FitzGerald
201-948-2642
201-948-5131 (fax)

Degree(s): M.A.

Description:

The School of Conservation (SOC) offers Graduate Fellowships leading to a M.A. degree in Environmental Studies with a concentration in Environmental Education. The SOC is the field campus for Montclair State University and is the oldest university operated residential environmental field studies center in the world. Applicants should hold a bachelors degree from an accredited institution with a concentration in elementary education, secondary education, natural science, or social science. However, applicants in related disciplines will also be given consideration. All applicants must have a GPA of 3.0 (on a 4.0 scale) or better.

The Fellowship involves taking residence at the SOC and teaching field sessions related to the environment comprising approximately 15 hours each week. The Fellows take a variety of courses on the main campus including: Curriculum Development in Environmental Education, Administration and Supervision of Environmental Field Study, Environmental Change and Communication, Environmental Geoscience, Methods of Research, Ecology or Conservation Biology, and an independent research project or thesis.

In addition to room and board at the SOC, the Fellows will receive a stipend of $1,500 for the academic year and remission of tuition for all graduate courses required to fulfill the specific degree requirements.

Institution: New York University
School of Education
Department of Culture & Communication
239 Greene Street (after 737 East Building)
New York, NY 10003

Program: Environmental Conservation Education

Contact: Dr. Tom Colwell
212-998-5637

Degree(s): M.A.

Description:

Interdisciplinary study of major environmental issues. A wide range of elective courses from the many schools and divisions of the University in science and technology, media, social science, and education are grouped around core courses and seminars in the philosophical and social issues of environmental problems.

Institution: Northeastern Illinois University
College of Arts & Sciences
Department of Geography and Environmental Studies
5500 North St. Louis
Chicago, IL 60625

Program: Geography and Environmental Studies

Contact: Dr. Erick Howenstine

Degree(s): M.A.

Description:

Program is designed to provide advanced analysis of environmental and spatial systems. Included are ecological studies of human-environmental inter-relations, studies of rapidly changing landscapes, locational studies concerning the geometrics of movement, size, shape and distance, and studies of environmental resources in terms of their interpretation, development, and use. Urban land use planning sequence is also available.

Institution: Northern Illinois University
College of Education
Curriculum & Instruction Department
Lorado Taft Campus
Box 299
Oregon, IL 61061

Program: Curriculum & Instruction

Contact: Dr. Clifford Knapp

Degree(s): M.S.Ed.

Description:

The master's degree provides specialized study in 3 areas: curriculum and supervision, secondary education, and outdoor teacher education (OTE). The major focus of the degree is to prepare professionals for educational responsibilities in formal and nonformal institutional settings. The program blends practical teaching expertise with a foundational body of theoretical and research-based knowledge components.

The OTE specialization focuses on using community resources, both natural and build, outside the formal classroom to enhance the school curriculum or institutional program. The courses are designed to prepare teachers, interpretive naturalists, and other outdoor/environmental educators for professional roles in a variety of instructional settings. These settings include schools, EE and nature centers, youth camps, and therapeutic institutions. By selecting specific elective courses, individuals may also prepare for supervisory and administrative roles in day-use or residential programs in which the outdoors is used as an important learning environment. The primary instructional approach centers upon the experiential learning cycle in which learners participate in meaningful activities, reflect upon them individually and in a group, internalize the resulting knowledge and then apply this knowledge to new situations.

The program if study consists of a minimum of 22 semester hours, including a minimum of 18 semester hours in the Curriculum and Instruction major. A non-thesis option includes 6 3-credit core courses.

Institution: Northern Illinois University
College of Liberal Arts & Sciences
Department of Geography
DeKalb, IL 60115

Program:

Contact: Dr. Kenneth Bowden

Degree(s): M.S.

Description:

NIU offers graduate degree programs in the following departments whose programs produce possibly significant work on environmental topics: Biological Science (M.S., Ph.D), Geography - emphasis in natural environmental systems, urban economics, and meteorology – (M.S.), Geology (M.S., Ph.D.), Economics (M.S., Ph.D.), Chemistry (M.S., Ph.D.), Physics (M.S.), Political Science (M.S., Ph.D.).

Institution: Perdue University
College of Forestry & Natural Resources
W. Lafayette, IN 47907

Program: Recreation Resources/Forest Recreation

Contact: Dr. Douglas M. Knudson

Degree(s): M.S. & Ph.D.

Description:

The program emphasizes interpretation as part of recreation resource management. The focus is on economic and sociological impacts and values of interpretation to management and to forest visitors. Evaluation of interpretive programming, exhibits, and facilities is done in terms of cost effectiveness.

Institution: Southern Illinois University at Carbondale
Department of Curriculum & Instruction
Science & Environmental Education Center
Carbondale, IL 62901

Program: Science and/or Environmental Education

Contact: Dr. Trudi L. Volk
618-453-4214
618-687-1152 (fax)

Degree(s): M.S.Ed. & Ph.D.

Description:

Both M.S.Ed. and Ph.D. Degrees are offered at SIU-C. The environmental education student can select a specialty in environmental education (EE) or a combination of EE and science education in either degree program. The M.S.Ed. degree is awarded in curriculum and instruction in combination with the specialty area. The Ph.D. is tendered in education in combination with the specialty area.

In both degree programs there are required courses in both curriculum and instruction as well as research methods. The doctoral program also asks that the student complete two seminars in professional education as well as a research tool (typically but not always inferential statistics).

The M.S.Ed. student will complete either a Master's Project or a Thesis depending on career goals subsequent to the completion of the degree. The project route necessitates additional hours of preparation usually totaling 36 or more. The doctorate demands a dissertation as part of a 65 hour program (excluding the research tool requirement).

Both formal and nonformal students are eligible to apply to SIU-C for admission to the program. Interested students are urged to interview either current graduate students or former ones. Names and addresses will be provided upon request. TAships and fellowships are often available.

Institution: Southern Illinois University at Edwardsville
College of Arts & Sciences
Box 1099
Edwardsville, IL 62026-1099

Program: Environmental Studies

Contact: Dr. Frank Kulfinski

Degree(s): M.S.

The environmental studies program is interdisciplinary and leads to a M.S. in environmental studies. General and science options are available. The faculties of all departments are available for reference and instruction. Students select their own topics for research. Besides developing marketable skills in analysis and communication, the program attempts to cultivate broad perspectives on major environmental problems.

Institution: Southern Oregon State College
Biology Department
Ashland, OR 97520

Program: Environmental Education

Contact: Dr. Stewart Janes

Degree(s): M.S.

The EE program strives to develop leaders in conservation and environmental education. The program has a strong field emphasis and gives the student a broad background in the natural sciences. It promotes an understanding of the interrelationships of the ecological and economic aspects of conservation. Techniques of EE are emphasized.

Institution: State University of New York at Brockport
Department of Biological Science
113 Lennor Hall
Brockport, NY 14420

Program:

Contact: Dr. Joseph C. Makarewicz

Degree(s): M.S.

Description:

The Department of Biological Sciences offers 2 plans for the M.S. degree in Biological Sciences: Plan 1 (thesis option) or Plan 2 (independent research non-thesis option). The expertise and experience of 26 faculty members service about 30 graduate students in several areas of research. Approximately 13 faculty are active in environmentally-oriented research and teaching. The Department is well-equipped with both conventional instruments and a number of unique facilities (e.g., artificial streams). Field equipment for aquatic and terrestrial ecology are available, including 4 boats. The close proximity of the Finger Lakes Region, Lake Ontario, the Adirondack Park of New York, and the 500 acres at Fancher Campus of SUNY at Brockport provide ample sites for ecological research. A new emphasis in aquaculture has been initiated with the construction of 6 aquaculture ponds and experimental laboratory raceways.

Institution: Texas A & M University
Department of Recreation, Parks & Tourism Sciences
College Station, TX 77843-2261

Program:

Contact: Dr. James H. Gramann or Dr. Patricia A. Stokowski

Degree(s): M.Ag., M.S., Ph.D.

Description:

The interpretation option identified and provides research-based solutions to communication problems encountered by administrators, managers, practitioners, and educators. The focus is upon the utilization of interpretation as a resource management tool, and upon the communication of technical knowledge in resource management lay audiences.

Institution: The Johns Hopkins University
Department of Geography and Environmental Engineering
Baltimore, MD 21218

Program:

Contact: Dr. J. Hugh Ellis

Degree(s): M.A., M.S., M.S.E., Ph.D.

Description:

The graduate program in geography and environmental engineering has 4 major facets:

- environmental engineering and chemistry
- surficial earth processes and hydrology
- systems analysis and economics
- human geography

Study in these areas includes

- engineering processes to alleviate environmental problems
- understanding environmental science, ecology, and related surficial processes
- application of engineering solutions in the context of the public decision-making process including economic, social, and administrative factors
- analysis of interrelationships of engineering and administrative decisions and cultural, institutional, and government sectors of society including economic, social, and administrative factors.

Institution: The Ohio State University
School of Natural Resources
2021 Coffey Road
Columbus, OH 43210

Program: Environmental communication, education, and interpretation

Contact: Dr. Robert E. Roth
614-292-2265
614-292-7432 (fax)
roth.3@osu.edu

Degree(s): M.S. & Ph.D.

Description:

Master's candidates working with an advisor may propose their own 45-quarter-hour thesis or 55-quarter-hour non-thesis program to build on a corre of courses in natural resources, environmental education, interpretation, and communication. Dual master's degree programs can be developed with other departments. Ph.D. candidates can develop one-of-a-kind programs with 90-quarter-hours beyond the Master's and a minimum of three consecutive academic quarters full-time on campus. Ph.D credits are divided among topics of Ecosystem Science and Mangement, Human Impacts and Change

Processes, and research courses. GRE verbal and quantitative scores are required for admission to graduate programs.

Institution: The Pennsylvania State University
School of Hotel, Restaurant & Recreation Management
201 Mateer Building
University Park, PA 16802

Program: Leisure Studies

Contact: Dr. Stuart H. Mann

Degree(s): M.S., M.Ed., Ph.D.

Description:

Prepares students for administrative, supervisory, research, and teaching positions in public and private recreation and park systems, in colleges and universities, in voluntary agencies and institutions, and in commercial and tourism-related ventures. The program is oriented to meet the specific needs and research interests of the candidate.

Institution: The University of Akron
Department of Physical and Health Education
116 Memorial Hall
Akron, OH 44325-5102

Program: Outdoor Education

Contact: Dr. Doris Marino or Dr. Gayle J. Workman

Degree(s): M.A.Ed., M.S. Ed.

Description:

The Outdoor Education graduate option, requiring 32 credits, leads to the acquisition of Master of Science or Master of Arts degree in Education. The option is designed primarily for teachers who hold certification in all subject areas and grade levels or for those students having an undergraduate background in elementary or secondary education, biology, environmental studies, health, physical education, or recreation. It is a process approach to education which utilizes the existing school curriculum as the foundation for the teaching/learning process. Students may become involved with existing ourdoor education programs in the public schools, metropolitan, state, and national park programs, or private and public agencies with conduct outdoor/environmental education programs

The goals of the program are to enhance existing curriculum, expand environmental awareness, utilize resources beyond the school building, expand knowledge to unique environments, involve more of the learner in the process of learning, and enhance the position of the educator as a decision-maker. These goals are accomplished through participation in a series of graduate courses, individual research, ,study options, and practice. There is also emphasis upon the decision-making process of the teacher as it relates to teaching and learning. Conceptually, the individual research and independent study options as well as practice are viewed as culminating experiences for the teacher.

Institution: The University of Arizona
School of Renewable Natural Resources
325 Bio. Sci. East
Tucson, AZ 85721

Program: Renewable Natural Resources

Contact: Dr. William W. Shaw

Degree(s): M.S. & Ph.D.

Description:

Coursework and graduate studies are available involving interpretation, education, and communication as they pertain to the management of natural resources.

Institution: The University of British Columbia – Vancouver
#436E – 2206 East Mall
Vancouver, BC V6T 1Z3
Canada

Program: Resource Management & Environmental Studies

Contact: Dr. L.M. Lavkulich

Degree(s): M.A., M.Sc., Ph.D.

Description:

Program is an interdisciplinary program in resource management and environmental studies. Students may specialize in a number of concentrations via land, wildlife, fisheries, energy, and/or water resources management, and ecological policy analysis. New concentrations being developed include risk perception and evaluation and environmental livability. Programs are "tailor-made" for individual students to meet student desires as well as academic excellence.

Institution: The University of Michigan
Office of Academic Programs
School of Natural Resources and Environment
1024 Dana Building
Ann Arbor, MI 48109-1115

Program: Resource Policy and Behavior

Contact:

Degree(s): M.S. & Ph.D.

Description:

The EE/Communication, Advocacy, and Behavior program in the School of Natural Resources and Environment (SNRE) is designed for students interested in the social and behavioral aspects of natural resource and environmental problems. This program prepares students to pursue a variety of careers designing, establishing, administering, and/or evaluating conservation behavior and EE programs; directing organizations advocating environmental change; organizing community groups; and training practitioners to manage environmental disputes.

SNRE has significant faculty strength in the social sciences. More than one-third of the School's faculty are social scientists with expertise in EE, environmental psychology, sociology, organizational behavior, political science, and conflict management. In addition, The University of Michigan's excellence in the social sciences is reflected not only in its top-rated disciplinary departments, but also in world-renowned research institutes such as the Institute for Social Research. Drawing form the disciplines of sociology, psychology, anthropology, and political science, and the field of education, the curriculum focuses on understanding individual, group, organizational, and societal behavior in order to develop effective policies and programs using tools and methodologies of these disciplines. Training also emphasizes the acquisition of quantitative and qualitative skills needed by profi.ssional in the fields.

Institution: The University of Montana
College of Arts & Sciences
Jeannette Rankin Hall
Missoula, MT 59812

Program: Environmental Studies

Contact: Dr. Thomas Roy

Degree(s): M.S.

Description:

Environmental studies is an interdisciplinary graduate program which was developed in response to the critical need for knowledgeable, active people who are prepared to deal with crucial environmental problems. The program accepts students from any discipline. Our concern is for analyzing and "solving" environmental problems; therefore, advocacy skill are developed.

Institution: The University of New Mexico
College of Education
Johnson Center, Room 112C
Albuquerque, NM 87131-1251

Program: Parks and Recreation

Contact: Dr. Paul S. Miko

Degree(s): M.A. & Ph.D.

Description:

The Parks and Recreation Program in the College of Education offers a 36 credit-hour M.A. and 90 credit-hour Ph.D. program with concentrations in EE. Special areas of emphasis include multicultural environmental awareness, sustainable parks, recreation, and tourism development, and EE with special populations. A rich variety of federal, state, and non-government organizations and agencies in New Mexico are available for internship and experiential learning opportunities.

Institution: University of Hawaii at Manoa
College of Education
Department of Educational Foundations
Wist Hall, Room 113
1776 University Avenue
Honolulu, HI 96822

Program: Environmental Education

Contact: Chairman, Graduate Field

Degree(s): M.S.

Description:

The department has several areas of emphasis, one of which is EE. The program works in conjunction with the Environmental Studies Program in the University.

Institution: University of Idaho
College of Forestry, Wildlife & Range Sciences
Department of Resource Recreation and Tourism
Moscow, ID 83844-1139

Program: Interpretation and Natural Resource Communication

Contact: Dr. Sam Ham

Degree(s): M.S. & Ph.D.

Description:

Interpretation and natural resource communication is one of 5 specialty areas in the Department of Resource Recreation and Tourism. Graduates from this program work in national and state parks, forests, nature centers, wilderness areas, wildlife refuges, and on cruise ships traveling both domestic and international waters. River companies, outfitters, and other tourism businesses increasingly employ students from this specialty area. The program stresses natural and behavioral sciences with heavy emphasis on communication methods. Graduate students pursue the M.S. or Ph.D. degree through interdisciplinary studies designed by the student and her/his graduate committee.

Institution: University of Illinois at Springfield
School of Public Affairs and Administration
Springfield, IL 62794-9243

Program: Environmental Studies

Contact: Dr. Malcolm P. Levin

Degree(s): M.A.

Description:

The degree program provides students with the knowledge and skills necessary to function effectively in developing interdiscipinary approaches to solving environmental problems. The program offers concentrations in administration and planning and an individualized course of study. These curricula provide opportunities for students to gain both scientific knoweldge and technical skills in areas such as risk assessment, hazardous and solid wastes, water pollution biology and environmental chemistry and toxicology. Other course work integrates these areas with policy, the humanities and the social sciences.

Institution: University of New Hampshire
Natural Resources Ph.D. Program
CSRC, Morse Hall
Durham, NH 03824

Program: Natural Resources Ph.D.

Contact: Diana Wright
603-862-2172
603-862-0188 (fax)
djwright@christa.unh.edu

Degree(s): Ph.D.

Description:

Wise management of natural resources is a multidisciplinary effort. Solutions to environmental problems require some knowledge of the interaction between physical, biological, environmental, and socioeconomic factors. Ethical considerations underlie both the identification of environmental problems and choice of action. Consequently, it is essential that future environmental leaders understand how information and approaches in different disciplines might be used innovatively to address environmental and natural resource management problems.

To fill this need, the University of New Hampshire has established the Natural Resources Ph.D. Program. The program draws on the University's strengths in environmental and earth sciences, life sciences, social sciences, and ethical and policy studies, and has the following objectives:

1. to increase our understanding of environmental and natural resources problems and solutions at local, regional, and global scales;
2. to provide graduate students with the opportunity to pursue interdisciplinary research in natural resource management and the environmental sciences in their social and ethical context, and;
3. to stimulate excellence in research and teaching through increased contact between students and faculty in different departments and colleges.

Institution: University of Pittsburgh
College of Education
1N1O Forbes Quadrangle
Pittsburgh, PA 15260

Program: ITEC

Contact: Dr. Albert P. Nous

Degree(s): M.Ed. & Ed.D.

Description:

Master and doctoral level coursework is directed at the design of instructional resources, assessing the extent of cognitive growth of science concepts in young children and adolescents, uses of microcomputers in environmental simulations, and assessing needs of school and community interest groups. The improvement of science education in schools is the primary goal of the program.

Institution: University of Wisconsin – Madison
School of Journalism & Mass Communication
821 University Avenue
Madison, WI 53706

Program: Science/Environmental Communication

Contact: Dr. Sharon Dunwoody

Degree(s): M.A. & Ph.D.

Description:

The School offers both professional and scholarly training in communicating science/environment/health information to the public. In addition to journalistic training, professional programs offer assistance in picking up information and information campaign skills. Risk communication is another specialty area, particularly for those interested in scholarly training.

Institution: University of Wisconsin – Madison
Department of Agricultural Journalism
440 Henry Mall
Madison, WI 53706

Program: Natural Resources & Environmental Communication

Contact: Dr. John Fett

Degree(s): M.S. & Ph.D.

Description:

Has had a program in resource and environmental communication for over 30 years. Students in the M.S. program can focus their interests in the general area of environmental communication. Required courses include communication theory and methodology. Students must also complete a thesis, which can be on an environmental topic. The Ph.D. is in Mass Communications. Again, students can focus on environmental communications. The Ph.D. requires extensive preparation in theory and research methodology.

Institution: University of Wisconsin - Stevens Point
College of Natural Resources
Stevens Point, WI 54481

Program: Environmental Education

Contact: Dr. Richard Wilke

Degree(s): M.S.

Description:

The College of Natural Resources offers a graduate program in Environmental Education. Students can specialize in EE curriculum and instruction, nonformal EE, adult and community-based EE, environmental communication, environmental interpretation, or EE advocacy. The College offers both a thesis-based M.S. program for full-time students and a non-thesis program available through summer sessions for participating teachers. In a given year, there are typically 10-15 full-time thesis students and 50-75 teachers pursuing the non-thesis program. The College also offers a non-degree EE Institute each summer that includes coursework in EE content, methods, research, and leadership skills. Over 200 collateral courses in areas such as water, wildlife, forestry, resource policy and law, soils, waste management, environmental ethics, ecology, e environmental politics, environmental sociology, and nature literature are also available.

The College has 8 faculty with specific expertise and teaching responsibilities in EE. The faculty have excellent ties to state, federal, and private sector agencies and organization involved in EE.

Relevant practical experiences are provided through the Wisconsin Center for Environmental Education, Central Wisconsin Environmental Station (residential EE center) and Schmeeckle Reserve (community nature center).

Institution: University of Wisconsin - Stevens Point
Wisconsin Center for Environmental Education
4th Floor Learning Resources Center
Stevens Point, WI 54481

Program: Natural Resources (with emphasis in EE for elementary and secondary teachers)

Contact: Anne L. Green

Degree(s): M.S.

Description:

This M.S. program in Environmental Education is offered as a professional development program for teachers. The intent is to increase knowledge and leadership skills relative to natural resources and environmental education in K-12 schools and/or districts. Only individuals who have taught at least one year and view themselves as continuing in the teaching profession are considered for the program. This program is open to all K-12 teachers in all subject areas.

Institution: Virginia Polytechnic Institute & State University
Office of the Provost
Blacksburg, VA 24061-0132

Program:

Contact: W. David Conn
540-231-6122
conn@vt.edu

Degree(s): M.A., M.S., M.E., M.F., M.L.A., M.P.A., M.U.R.P, M.U.A., Ph.D.

Description:

Environmental studies encompasses a broad array of subject matter, approaches, and issues regarding the natural environment and the sustainability of the biosphere in thee face of human development. Considerable attention is currently devoted to environmental studies at the University in instructional programs, research, and outreach. More than 3 dozen centers, institutes, laboratories – on campus and across the Commonwealth – have environmental studies as a major focus, and well over 200 faculty members have environmental interests.

Although no single, comprehensive, graduate degree program in environmental studies is offered, a wide variety of environmentally-related degree programs (and options within degree programs) are available at the graduate level, in such fields as agriculture, engineering, forestry, landscape architecture, planning, and veterinary medicine as well as in the physical, life, and social sciences.

Institution: Washington State University
Department of Sociology
Pullman, WA 99164

Program: Environmental Sociology

Contact: Dr. Riley E. Dunlap

Degree(s): M.A. & Ph.D.

Description:

The graduate program in environmental sociology is one of several areas of specialization in the Department. Available courses include

- environmental sociology
- social impact assessment
- energy and society
- human ecology
- technology and society

as well as relevant courses in other departments. Students may take an applied or more theoretical approach for their comprehensive exams and theses.

Institution: West Virginia University
Division of Forestry
P.O. Box 6125
Morgantown, WV 26506-6125

Program: Recreation & Parks Management

Contact: Dr. Steve Hollenhorst

Degree(s): M.S.R. & Ph.D.

Description:

Offers a program at both the masters and doctoral level with emphasis areas in natural resource recreation and tourism management and social dimensions of forestry. Masters students may also focus their studies on recreation, parks, and tourism administration, program planning, leadership, and outdoor/environment education. Research assistantships are available.